

# **VehiCare Hub**

## **Online Vehicle Service Management System**

*Mini Project Report*

*Submitted by*

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**Reg. No: AJC19MCA-I028**

*In Partial fulfillment for the Award of the Degree of*

**INTEGRATED MASTER OF COMPUTER APPLICATIONS**

**(INMCA)**

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**



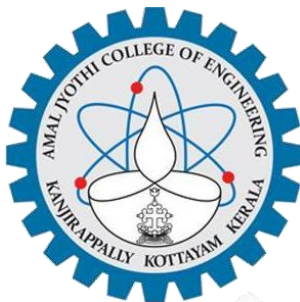
**AMAL JYOTHI COLLEGE OF ENGINEERING**

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[Affiliated to APJ Abdul Kalam Technological University, Kerala. Approved by AICTE, Accredited by NAAC with 'A' grade. Koovappally, Kanjirappally, Kottayam, Kerala – 686518]

**2023-2024**

**DEPARTMENT OF COMPUTER APPLICATIONS**  
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**CERTIFICATE**

This is to certify that the Project report, “**VehiCare Hub**” is the bonafide work of **Jesso Joseph (Regno: AJC19MCA-I028)** in partial fulfillment of the requirements for the award of the Degree of Integrated Master of Computer Applications under APJ Abdul Kalam Technological University during the year 2023-24.

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## **DECLARATION**

I hereby declare that the project report “**VehiCare Hub**” is a bonafide work done at Amal Jyothi College of Engineering, towards the partial fulfilment of the requirements for the award of the Integrated Master of Computer Applications (INMCA) from APJ Abdul Kalam Technological University, during the academic year 2023-2024.

**Date:31/10/2023**

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## ACKNOWLEDGEMENT

First and foremost, I thank God almighty for his eternal love and protection throughout the project. I take this opportunity to express my gratitude to all who helped me in completing this project successfully. It has been said that gratitude is the memory of the heart. I wish to express my sincere gratitude to our Manager **Rev. Fr. Dr. Mathew Paikatt** and Principal **Dr. Lillykutty Jacob** for providing good faculty for guidance.

I owe a great depth of gratitude and appreciation towards our Head of the Department **Rev. Fr. Dr. Rubin Thottupurathu Jose** for helping us. I extend my whole hearted thanks to the project coordinator **Ms. Meera Rose Mathew** for her valuable suggestions and for overwhelming concern and guidance from the beginning to the end of the project. I would also express sincere gratitude to my guide **Sr. Elsin Chakkalackal S H** for her inspiration and helping hand.

I thank our beloved teachers for their cooperation and suggestions that helped me throughout the project. I express my thanks to all my friends and classmates for their interest, dedication, and encouragement shown towards the project. I convey my hearty thanks to my family for the moral support, suggestions, and encouragement to make this venture a success.

JESSO JOSEPH

# **ABSTRACT**

The VehiCare Hub is an innovative online platform designed to simplify the management of vehicle maintenance and service appointments. This project addresses the need for a user-friendly system that enables vehicle owners and service providers to connect seamlessly, facilitating the scheduling of service appointments, tracking service history, and ensuring efficient vehicle maintenance. The system offers a comprehensive solution with four key modules:

- Admin
- Customers
- Workers
- Insurance Providers

The Service Management System harnesses technology to streamline vehicle service processes, fostering transparency, convenience, and informed decision-making for vehicle owners and service providers alike. It bridges the gap between customers and service centers, poised to revolutionize how vehicle maintenance and service appointments are managed and accessed.

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## List of Abbreviation

IDE	-	Integrated Development Environment
HTML	-	Hypertext Markup Language
CSS	-	Cascading Style Sheets
SQL	-	Structured Query Language
UML	-	Unified Modelling Language
RDBMS	-	Relational Database Management System
ORM	-	Object-Relational Mapping
MTV	-	Model-Template-View
MVC	-	Model-View-Controller
API	-	Application Programming Interface
UI	-	User Interface
BDD	-	Behaviour-Driven Development
1NF	-	First Normal Form
2NF	-	Second Normal Form
3NF	-	Third Normal Form
XSS	-	Cross-Site Scripting
CSRF	-	Cross-Site Request Forgery
CRUD	-	Create, Read, Update, Delete



# **CHAPTER 1**

## **INTRODUCTION**

## 1.1 PROJECT OVERVIEW

VehiCare Hub is an innovative initiative that seeks to transform the vehicle service industry with its intelligent online booking and management platform. This Python-based system aims to overhaul traditional processes and provide a seamless, technology-driven solution to streamline the end-to-end workflow - from service booking to completion. At its core, VehiCare Hub revolutionizes the way vehicle owners schedule and manage maintenance services, while optimizing operations for service providers. Vehicle owners benefit from the convenience of booking appointments online, tracking service history and making payments digitally. For service providers, the platform enables efficient appointment management, resource planning, and work allocation. The integration of cutting-edge voice recognition takes this platform to the next level, enabling real-time voice-based updates from workers. This hands-free, futuristic approach sets a new precedent in the automotive service sector.

In summary, VehiCare Hub aims to overhaul age-old processes and usher the automotive service industry into the digital era. By harnessing the power of technology to connect customers and service providers, this platform holds the promise of enhanced convenience, transparency, and efficiency across the service value chain.

## 1.2 PROJECT SPECIFICATION

- **Modules**

1. **Customers** - This module focuses on vehicle owners who seek services. They can create accounts, browse available services, book appointments, track their service status, review, and rate services, make online payments, and access their service history.
2. **Workers** - Mechanics and technicians fall under this module. They can provide voice-based updates on service status. It simplifies their task management, ensuring they can concentrate on providing quality service.
3. **Admin** - The central control module, administered by system administrators, manages the overall system, user accounts, bookings, and ensures a smooth system operation.
4. **Insurance Agents** - For insurance-related services, this module comes into play. Insurance agents can verify policy status and facilitate insurance claims, adding a layer of security and assurance for vehicle owners.

- **Functionalities**

1. User Registration and Login - Vehicle owners can create accounts and log in to access the system.
2. Workers Registration and Login - Mechanics can log in to offer their services using the login credentials which are created from admins side.
3. Browse Services - Users can explore the array of services available within the system.
4. Book Appointments - Vehicle owners can schedule service appointments by selecting their preferred date and time.
5. Appointment Management - Admins have the authority to approve, schedule, and assign bookings to workers, ensuring efficient operation.
6. Service Tracking - Users can monitor real-time updates on their ongoing and past service appointments.
7. Voice-based Status Updates - Mechanics can provide hands-free voice updates on the progress of work, enhancing efficiency.
8. Service History - Users can access a comprehensive record of their past service appointments for reference.
9. Ratings and Reviews - This feature enables users to rate services and provide valuable feedback, fostering trust and quality improvement.
10. Payments - An online payment gateway allows users to conveniently pay for services provided.
11. Admin Dashboard - Admins utilize this interface to manage appointments, service providers, and the overall system.
12. Insurance Claim Integration - Insurance agents can verify policy statuses and facilitate the processing of insurance claims.
13. Chatbot Support - A virtual assistant handles user inquiries, enhancing user experience.
14. Emergency Roadside Assistance - Users can request immediate dispatch of service vehicles for roadside emergencies.
15. Analytics - Extract valuable insights from service data to enhance operational efficiency and user satisfaction.

## **CHAPTER 2**

### **SYSTEM STUDY**

## **2.1 INTRODUCTION**

The process of system analysis holds a central and indispensable role in the development of the Vehicle Service Booking System. It serves as the compass that guides the project from its inception to its realization. System analysis is the cornerstone on which the entire edifice of this innovative platform is constructed. It is a critical journey of data collection and evaluation, a journey that embarks upon the landscape of the existing manual processes, identifies the existing challenges, and charts the course for designing effective and efficient solutions. System analysis is not just a phase; it is a comprehensive strategy. It is the art of understanding the present to shape a better future. In the context of the Vehicle Service Booking System, this journey encompasses everything from examining how vehicle owners traditionally booked their services to understanding the intricate needs of service providers and administrators who are the backbone of this ecosystem. Every aspect of the existing system, every challenge faced by users, every limitation encountered by service providers - they all serve as the building blocks of the new online platform. This process is meticulous and all-encompassing because the success of the Vehicle Service Booking System hinges on its ability to effectively bridge the gaps and enhance the overall experience of every stakeholder.

## **2.2 EXISTING SYSTEM**

The current system for vehicle service booking relies primarily on phone calls or in-person visits to workshops. Vehicle owners must manually contact service centers, inquire about availability, and schedule appointments. This process can be time-consuming, involving back-and-forth communication to align schedules. There is no centralized platform to view services or make bookings.

### **2.2.1 NATURAL SYSTEM STUDIED**

The existing workflow for scheduling vehicle service appointments is heavily reliant on manual processes like phone calls and in-person interactions. Vehicle owners must put in significant time and effort to contact service centers, check availability, and secure a booking according to their convenience. This decentralized system is unorganized and inefficient.

### **2.2.2 DESIGNED SYSTEM STUDIED**

To address the limitations of manual systems, the proposed solution is an online service booking platform - VehiCare Hub. This digital system will enable vehicle owners to conveniently search, select, and schedule service appointments online. Service providers can efficiently manage bookings and allocate resources. The platform aims to enhance user experience and optimize

operations in the vehicle service industry.

## 2.3 DRAWBACKS OF EXISTING SYSTEM

- **Time-Consuming Manual Processes:** The current system heavily relies on manual processes, such as phone calls and in-person interactions, to schedule vehicle service appointments. Vehicle owners must invest significant time and effort to contact service centers, inquire about service availability, and secure a booking. This manual approach results in inefficiencies, as it lacks the speed and convenience that modern digital solutions can offer.
- **Difficulty Finding Service Providers and Checking Availability:** Vehicle owners often struggle to find the right service provider for their specific needs. The lack of a centralized platform or directory makes it challenging to discover service providers and assess their availability. This can lead to a disjointed and frustrating experience for users.
- **Higher Likelihood of Miscommunication and Missed Bookings:** Manual processes are prone to miscommunication and errors. When booking services via phone calls or in-person visits, there is an increased risk of misunderstandings or bookings getting lost in the process. This can result in missed appointments, delays, and customer dissatisfaction.
- **Inability to Track Service History or Payments:** The existing system lacks the capability to maintain comprehensive records of service history and payments. Vehicle owners often struggle to keep track of the services they've availed and the payments made. This limitation makes it challenging to maintain an organized and transparent record of past transactions.
- **Limited Transparency and User Insight into Services:** In the absence of a centralized system, users have limited transparency and insight into the services being offered. They may not have access to detailed information about the service providers, their expertise, or the quality of services. This lack of transparency can hinder users' ability to make informed decisions.
- **Inconvenience of In-Person Visits to Schedule Appointments:** The requirement for in-person visits to service centers for scheduling appointments adds an extra layer of inconvenience. It demands users to allocate time and effort for visits, which could otherwise be saved through a more streamlined and digital process.

## 2.4 PROPOSED SYSTEM

VehiCare Hub provides a seamless online solution to transform traditional vehicle service booking processes. Vehicle owners can register, search for services, book appointments, make payments, and track history. Service providers benefit from managing bookings, resources, and work allocation on one centralized platform. Key features include service reminders, voice-based updates from workers, analytics, and integration with insurance providers. Overall, VehiCare Hub offers convenience, transparency, and efficiency for the vehicle service ecosystem.

## 2.5 ADVANTAGES OF PROPOSED SYSTEM

- **Increased Efficiency through Online Booking:** One of the primary benefits is the transition from time-consuming manual booking to efficient online booking. Vehicle owners can schedule service appointments at their convenience, eliminating the need for multiple phone calls or in-person visits. This streamlining of the booking process saves time for both users and service providers.
- **Enhanced User Convenience and Accessibility:** VehiCare Hub ensures that users can access services whenever and wherever they need them. With a user-friendly online platform, individuals can explore a wide range of services, book appointments, and make payments from the comfort of their homes or on-the-go, offering unmatched convenience.
- **Greater Transparency through Provider Ratings and Reviews:** The platform introduces a system of ratings and reviews, enabling users to provide feedback based on their experiences with service providers. This feature offers transparency and helps future users make informed decisions when selecting a service provider. It builds trust and accountability within the system.
- **Secure Digital Payments:** VehiCare Hub incorporates a secure digital payment gateway, which significantly enhances the safety and ease of payment for users. It eliminates the need for physical cash transactions and provides a level of trust and security for users making payments online.
- **Improved Tracking of Service History:** Users can access detailed records of their past service appointments, enhancing their understanding of the services they've received over time. This feature helps users maintain their vehicles more effectively and simplifies interactions with service providers.
- **Optimized Appointment Scheduling and Management:** The platform streamlines the process of scheduling and managing appointments for both users and service providers. It

enables efficient allocation of resources, helping service providers optimize their work schedules.

- **Real-Time Work Updates via Voice Integration:** The integration of voice-based updates from mechanics provides a unique advantage. Vehicle owners can receive real-time, hands-free updates on the status of their vehicles under repair, enhancing communication and trust between users and service providers.
- **Data-Driven Insights through Analytics:** The system collects data and offers analytical insights. These insights empower service providers to make data-driven decisions, optimize their operations, and serve their customers more effectively.
- **Streamlined Insurance Claim Processing:** VehiCare Hub simplifies the process of verifying policy status and processing insurance claims. This integration with insurance providers helps users swiftly address insurance-related matters within the context of vehicle service.



## **CHAPTER 3**

# **REQUIREMENT ANALYSIS**

### **3.1 FEASIBILITY STUDY**

The feasibility study will assess the viability of the proposed online vehicle service booking and management system. Technical feasibility evaluation will analyze the availability of required technologies, tools, infrastructure, and expertise for development and maintenance of the platform, its scalability, and integration capabilities. Economic feasibility will involve cost-benefit analysis by estimating development, operating, and marketing costs versus revenue potential through commissions, subscriptions, etc to determine profitability. Operational feasibility will evaluate the integration of the new system into existing workshop workflows, its ability to streamline appointment management and optimize resource planning. Scheduling feasibility will determine realistic timelines for system development, testing, and launch. Overall, the feasibility analysis across these key areas will provide data-driven insights regarding the practicality of successful implementation, helping make informed go/no-go decisions about the vehicle service booking project.

#### **3.1.1 ECONOMICAL FEASIBILITY**

A detailed economic feasibility study will be conducted to evaluate the financial viability of the proposed online vehicle service booking system. This will involve estimating the initial software development and testing costs, ongoing expenses like cloud infrastructure, server maintenance, and cost of customer support staff. The analysis will estimate revenue opportunities through various potential streams like subscription fees from workshops, commissions on bookings, advertisement placements, and more. A clear cost-benefit analysis will be performed to assess profitability. Different monetization models will be analysed to determine optimal pricing strategy. Return on investment will be calculated to evaluate the potential for sustainable growth and long-term profit generation. Thorough economic feasibility assessment is critical to ascertain the platform's capacity to achieve financial objectives and provide satisfactory returns. This data-driven study will inform go/no-go decisions regarding the booking system project.

#### **3.1.2 TECHNICAL FEASIBILITY**

In the technical feasibility assessment, will be conducted to assess if the required technologies, frameworks, infrastructure, and expertise are available to support development and maintenance of the vehicle service booking system. The capabilities of potential technology stacks and tools will be evaluated to choose optimal solutions for front-end, back-end, database, and mobile apps. Scalability requirements will be analyzed to ensure the system can handle growth in users and transactions without performance issues. Integration capabilities with external systems like insurance and payments will be examined. Additionally, the availability of skilled developers and IT resources to design, build, test,

and maintain the booking platform, apps, and database architecture will be verified. Thorough technical feasibility analysis will ensure the project is viable from a technical perspective before further investment occurs.

### **3.1.3 BEHAVIORAL FEASIBILITY**

The behavioral feasibility study will evaluate user acceptance and willingness to adopt the new online vehicle service booking system. Workshops and technicians will be surveyed to assess their openness to transitioning from manual bookings to digital platforms. Their ability to adapt workflows and utilize new technical features will be gauged. Vehicle owners' motivation to move away from traditional booking processes will be analyzed through focus groups and usability testing. Effective change management strategies will be devised to promote engagement. User experience design principles will aim to maximize ease of use. Education programs will ensure stakeholders are trained to leverage the new system. Addressing privacy and security concerns can improve adoption. Overall, behavioral feasibility helps determine project success by ensuring user-friendly and intuitive design that provides value exceeds inconvenience to drive adoption.

### **3.1.4 FEASIBILITY STUDY QUESTIONNAIRE**

#### **A. Project Overview?**

VehiCare Hub is an online platform that aims to revolutionize the way vehicle owners schedule and manage maintenance services. This system enables customers to conveniently book appointments, track service history, and make payments digitally. For service providers, the platform offers efficient management of bookings, resources, and work allocation.

#### **B. To what extent the system is proposed for?**

The proposed VehiCare Hub system aims to fully digitize and streamline the end-to-end vehicle servicing process. It will enable customers to book appointments, track service status, provide feedback and make payments online. For service providers, it offers tools to manage bookings, resources, workers, and operations efficiently on one integrated platform. The main project expansion would include adding predictive maintenance based on vehicle telemetry data.

**C. Specify the Viewers/Public which is to be involved in the System?**

- Vehicle Owners: Customers who need to service their vehicles.
- Workers: Workshops, garages, technicians performing the actual services.
- Admin: Managing the platform and user accounts.
- Insurance Agents: For processing insurance claims.

**D. List the Modules included in your System?**

- User Registration and Login
- Browse Services
- Book Appointments
- Appointment Management
- Service Tracking
- Voice-based Updates
- Service History
- Ratings and Reviews
- Payments
- Admin Dashboard

**E. Identify the users in your project?**

- Vehicle Owners
- Workers
- Admins

**F. Who owns the system?**

Administrators (Jesso Joseph INTMCA S9)

**G. System is related to which firm/industry/organization?**

The VehiCare Hub system is related to the automotive service industry.

**H. Details of person that you have contacted for data collection?**

Akash Aji, Manager, Orange Yamaha Kanjirappally

**I. Questionnaire to collect details about the project? (Min 10 questions, include descriptive answers, attach additional docs (e.g., Bill receipts, certificate models), if any?)**

1. How do customers currently book appointments for vehicle servicing?  
Mostly by calling our center or walking in personally.
2. What are the major challenges with current booking process?  
Time consuming, difficulty aligning customer and our availability.
3. How frequently do customers inquire about service costs before booking?  
Almost every customer asks about approximate charges before confirming a booking.
4. Do you offer pick up and drop services currently?  
We provide pick up and drop selectively based on availability of drivers.
5. What payment methods do you accept?  
Cash, credit/debit cards, some digital wallets.
6. How do you keep customers updated about service status?  
We call them at key status milestones like parts replacement needed, job completed.
7. Do customers often request for discounts or deals?  
Yes, discounts on labor charges, free car wash or pick up/drop are common requests.
8. Are there instances of customers not showing up for booked appointments?  
Around 10-15% no shows on average per month.
9. Would you be interested in using an online booking and payment system?  
It can make booking and collection very efficient.
10. What are the typical documents you handle for each customer?  
Job card, billing invoice, receipt voucher, insurance forms.

## 3.2 SYSTEM SPECIFICATION

### 3.2.1 HARDWARE SPECIFICATION

Processor - intel i3

RAM - 4 g b

Hard disk - 2 5 6 g b

### 3.2.2 SOFTWARE SPECIFICATION

Front End - HTML, Bootstrap, CSS

Back End - Django, Python

Database - SQLite

Client on PC - Windows 7 and above.

Technologies used - JS, HTML5, AJAX, J Query, CSS, Python, Machine Learning

## 3.3 SOFTWARE DESCRIPTION

### 3.3.1 PYTHON DJANGO

Django Framework is a popular and robust web framework for Python developers. It is revered for its simplicity, clean code, and rapid development capabilities. Django is built on the Model-Template-Views (MTV) architectural pattern, which shares similarities with the Model-View-Controller (MVC) pattern used in other frameworks. One of its standout features is the Object-Relational Mapping (ORM) system, simplifying database interactions by representing database tables as Python objects. This abstraction eliminates the need for writing raw SQL queries, making database operations more straightforward.

Django also offers a built-in administrative interface, making content management a breeze. Its URL routing system allows developers to define clean and user-friendly URLs for their web applications. Furthermore, Django provides comprehensive support for form handling, data validation, and user authentication, reducing the complexity of common web development tasks. Security is a top priority in Django, with built-in protections against common web vulnerabilities like Cross-Site Scripting (XSS) and Cross-Site Request Forgery (CSRF). The framework's modular architecture encourages extensibility, enabling developers to incorporate third-party packages or develop custom components.

With a thriving community and an array of reusable packages, Django is a versatile choice for web development projects of varying sizes and complexities.

### **3.3.2 SQLITE**

SQLite is a lightweight, self-contained, and serverless relational database management system. Unlike traditional databases, it does not require a separate server but is embedded directly within the application. One of its standout features is the self-contained nature of SQLite databases; the entire database is stored in a single file, simplifying management, backups, and transfers. Despite its lightweight design, SQLite is ACID-compliant, meaning it ensures data integrity by supporting transactions, making it suitable for multi-user environments.

SQLite is cross-platform and compatible with various operating systems, making it a versatile choice for applications targeting different platforms. Its small code size and minimal resource usage make it suitable for resource-constrained environments, such as mobile devices. SQLite is known for its speed and efficiency, especially in read-heavy workloads. It is commonly used in mobile applications, desktop applications, and embedded systems, where a full-fledged database server might be excessive, and portability is essential.

## **CHAPTER 4**

### **SYSTEM DESIGN**



## 4.1 INTRODUCTION

System design is a critical phase in the software development process that serves as the bridge between conceptualizing a software solution and bringing it to life. It plays a pivotal role in translating the requirements gathered during the earlier stages into a well-structured and efficient system. At its core, system design involves making key decisions about the system's architecture, components, modules, interfaces, and data flows, creating a blueprint for the entire system. This blueprint not only addresses the technical aspects but also factors like scalability, security, and user experience. System design is instrumental in ensuring that the resulting software system is reliable, maintainable, and performs optimally. It provides a reference point for the development team, guiding them towards the successful creation of the software system.

In this phase, designers and architects collaborate to create a comprehensive system design that offers a clear roadmap for developers to implement. The design document serves as a guiding light throughout the development process, outlining how different parts of the system will interact and function together to achieve the desired objectives. The resulting system design is a crucial foundation for the development team to build upon, ensuring that the software solution meets the needs of its users and stakeholders while adhering to best practices in software engineering. In summary, system design is a structured and methodical approach to defining how a system will work and how it will meet the requirements of the project, making it an essential step in the journey from concept to a fully functional, real-world solution.

## 4.2 UML DIAGRAM

**Unified Modelling Language (UML)** stands as a foundational tool in software engineering, renowned for its role in visually representing complex systems and processes. It provides a standardized set of graphical notations that facilitate the clear depiction of various aspects of a system's structure and behaviour. Originating from the collaboration of industry experts, UML has gained widespread acceptance and adoption in both academia and industry. It serves as a powerful communication tool, enabling stakeholders, including developers, designers, and clients, to attain a shared understanding of system architecture, design, and functionality. UML diagrams act as a lingua franca, transcending language barriers and ensuring a consistent means of conveying intricate software concepts, ultimately enhancing the efficiency and effectiveness of the software development process.

## Types of UML diagrams

- Class diagram
- Object diagram
- Use case diagram
- Sequence diagram
- Activity diagram
- State chart diagram
- Deployment diagram
- Component diagram

### 4.2.1 USE CASE DIAGRAM

Use Case Diagrams, a cornerstone in software engineering, serve as a visual representation of the interactions between a system and its external entities. At their core, they provide a structured means of identifying and defining the various functionalities a system offers and how these functionalities are accessed by different actors or entities. Actors, representing users, systems, or external entities, are depicted along with the specific use cases they engage with. Associations between actors and use cases elucidate the nature of these interactions, clarifying the roles and responsibilities of each entity within the system. This detailed visual representation not only enhances communication among stakeholders but also provides a clear blueprint for system functionality, laying the foundation for the subsequent stages of the software development process. Overall, Use Case Diagrams play a pivotal role in aligning development efforts with user expectations, ensuring that the resulting software system fulfills its intended purpose effectively and efficiently.

- **Actor Definition:** Clearly define and label all actors involved in the system. Actors represent external entities interacting with the system.
- **Use Case Naming:** Use descriptive names for use cases to accurately convey the functionality they represent.
- **Association Lines:** Use solid lines to represent associations between actors and use cases. This signifies the interaction between entities.
- **System Boundary:** Draw a box around the system to indicate its scope and boundaries. This defines what is inside the system and what is outside.
- **Include and Extend Relationships:** Use "include" relationships to represent common functionalities shared among multiple use cases. Use "extend" relationships to show optional or extended functionalities.

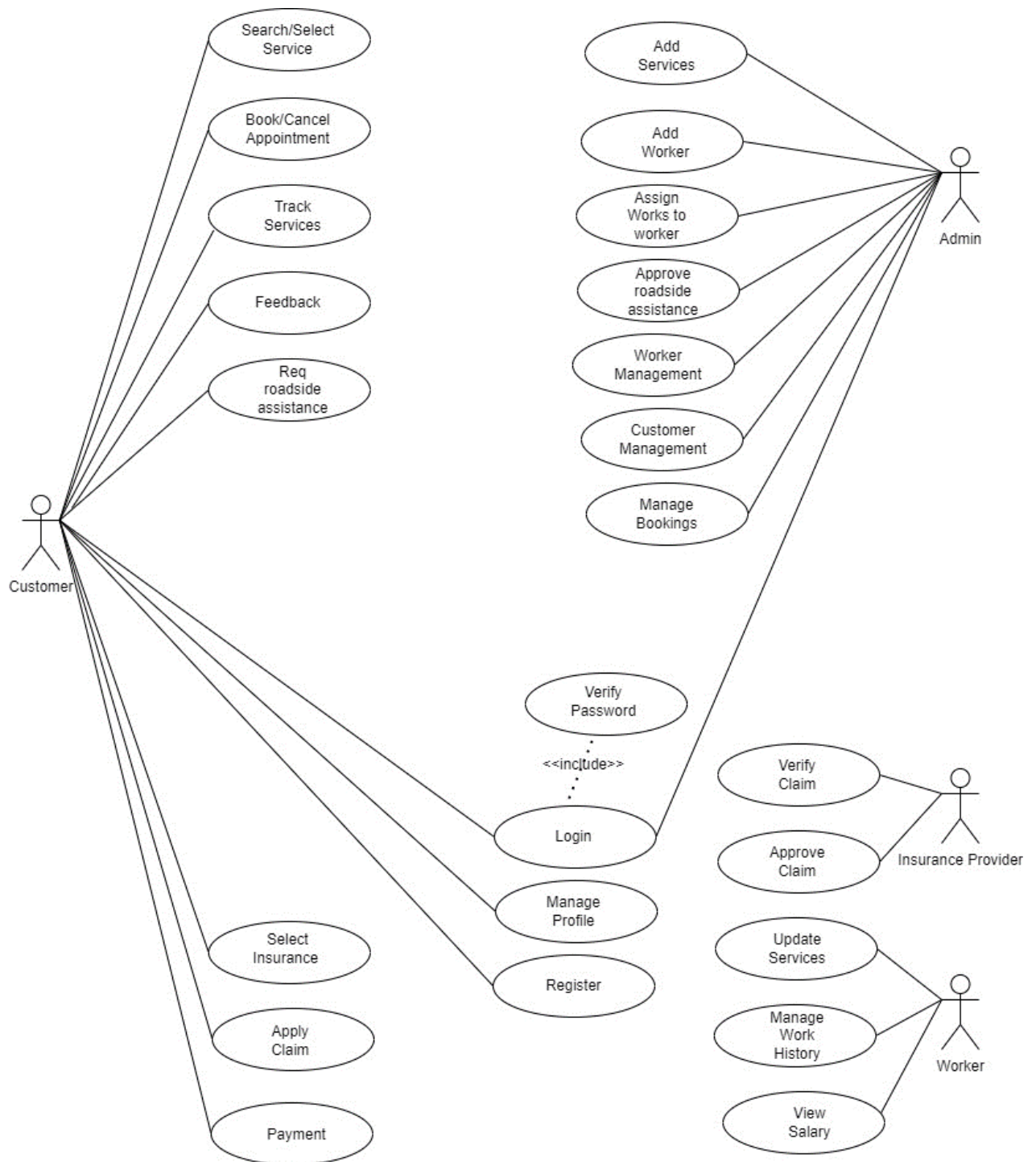


Figure 1 : Use Case Diagram of Admin, Customer and Workers

### 4.2.2 SEQUENCE DIAGRAM

Sequence Diagrams stand as dynamic models in software engineering, portraying the chronological flow of interactions between various objects or components within a system. They spotlight the order in which messages are exchanged, revealing the behavior of the system over time. Actors and objects are represented along a vertical axis, with arrows indicating the sequence of messages and their direction. Lifelines, extending vertically from actors or objects, illustrate their existence over the duration of the interaction. These diagrams serve as a vital tool for visualizing system behavior and understanding the temporal aspects of a software process. Through Sequence Diagrams, stakeholders gain valuable insights into how different elements collaborate to achieve specific functionalities, facilitating more effective communication among development teams and stakeholders alike. This detailed representation not only aids in detecting potential bottlenecks or inefficiencies but also provides a foundation for refining system performance in the later stages of software development.

- **Vertical Ordering:** Represent actors and objects along a vertical axis, indicating the order of interactions from top to bottom.
- **Lifelines:** Extend vertical lines from actors or objects to denote their existence and participation in the interaction.
- **Activation Bars:** Use horizontal bars along lifelines to show the period during which an object is active and processing a message.
- **Messages and Arrows:** Use arrows to indicate the flow of messages between objects, specifying the direction of communication.
- **Self-Invocation:** Use a looped arrow to represent self-invocation, when an object sends a message to itself.
- **Return Messages:** Indicate return messages with a dashed arrow, showing the response from the recipient.
- **Focus on Interaction:** Sequence Diagrams focus on the chronological order of interactions, avoiding implementation details.
- **Concise Notation:** Use clear and concise notation to represent messages and interactions, avoiding unnecessary complexity.
- **Consider System Boundaries:** Clearly define the boundaries of the system to indicate what is included in the interaction.
- **Feedback and Validation:** Seek feedback from stakeholders and team members to ensure the diagram accurately represents the system behavior.

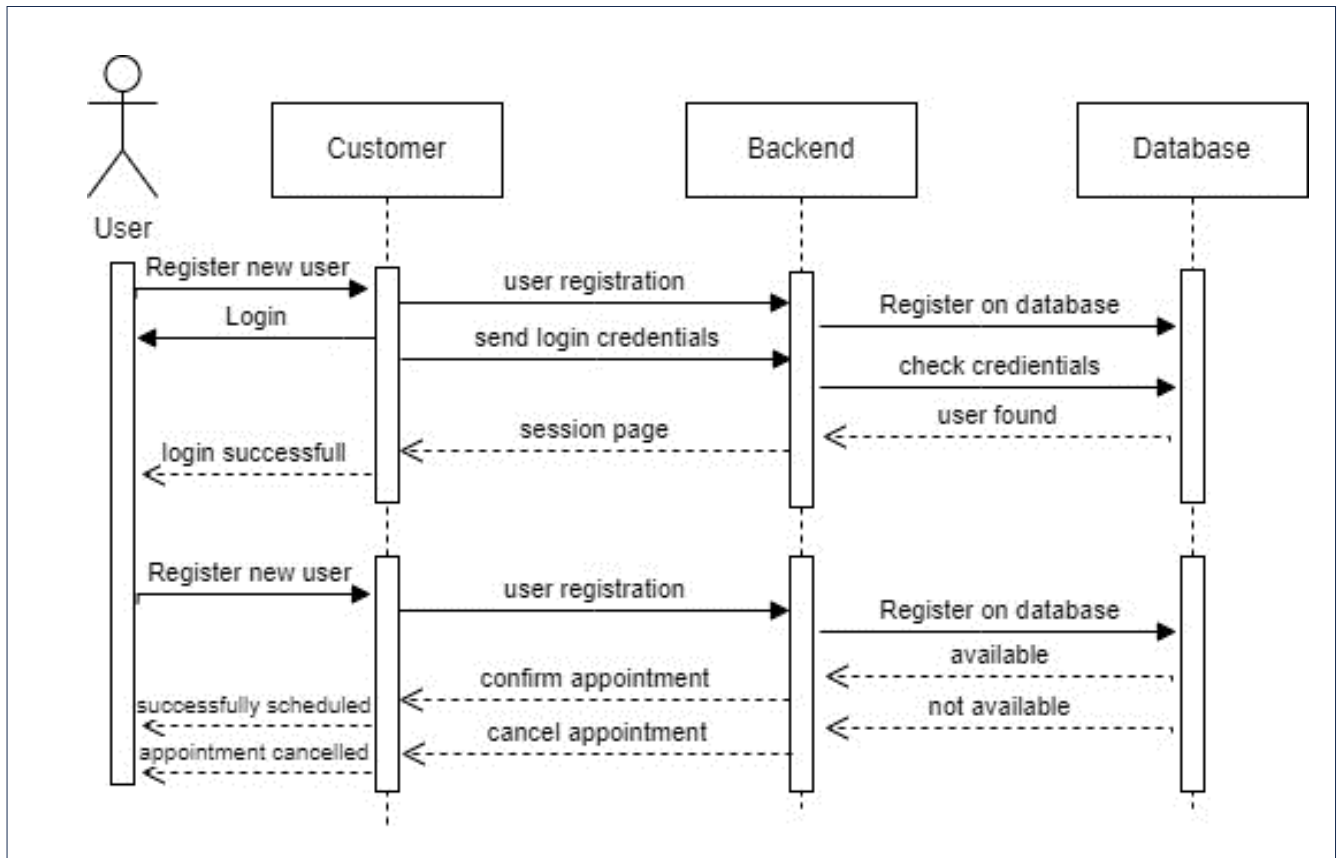


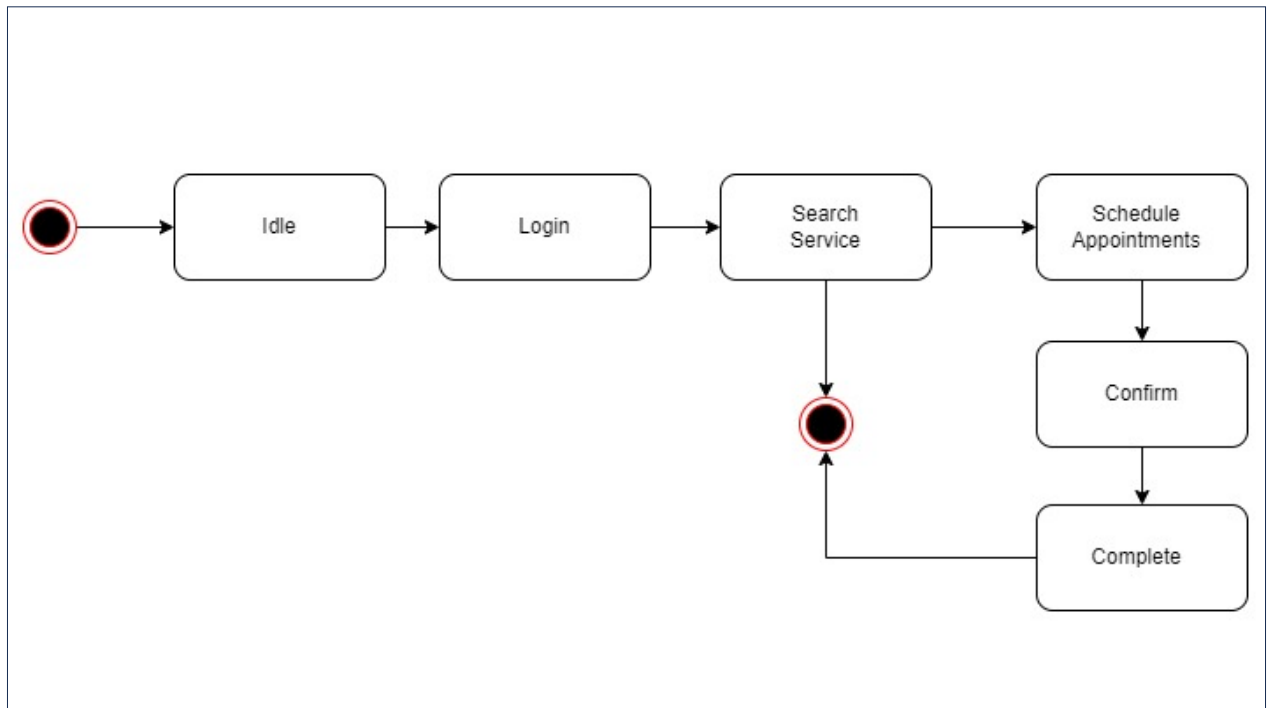
Figure 2 : Sequence Diagram of VehiCare Hub

### 4.2.3 STATE CHART DIAGRAM

A State Chart Diagram, a fundamental component of UML, provides a visual representation of an object's lifecycle states and the transitions between them. It depicts the dynamic behavior of an entity in response to events, showcasing how it transitions from one state to another. Each state represents a distinct phase in the object's existence, while transitions illustrate the conditions triggering state changes. Initial and final states mark the commencement and termination of the object's lifecycle. Orthogonal regions allow for concurrent states, capturing multiple aspects of the object's behaviour simultaneously. Hierarchical states enable the representation of complex behaviours in a structured manner. Entry and exit actions depict activities occurring upon entering or leaving a state. Moreover, guard conditions ensure that transitions occur only under specified circumstances. State Chart Diagrams play a crucial role in understanding and designing the dynamic behaviour of systems, aiding in the development of robust and responsive software applications.

Key notations for State Chart Diagrams:

- **Initial State:** Represented by a filled circle, it signifies the starting point of the object's lifecycle.
- **State:** Depicted by rounded rectangles, states represent distinct phases in an object's existence.
- **Transition Arrow:** Arrows denote transitions between states, indicating the conditions triggering a change.
- **Event:** Events, triggers for state changes, are labeled on transition arrows.
- **Guard Condition:** Shown in square brackets, guard conditions specify criteria for a transition to occur.
- **Final State:** Represented by a circle within a larger circle, it indicates the end of the object's lifecycle.
- **Concurrent State:** Represented by parallel lines within a state, it signifies concurrent behaviours.
- **Hierarchy:** States can be nested within other states to represent complex behaviour.
- **Entry and Exit Actions:** Actions occurring upon entering or leaving a state are labelled within the state.
- **Transition Labels:** Labels on transition arrows may indicate actions or operations that accompany the transition.



*Figure 3: State Chart Diagram of VehiCare Hub*

#### 4.2.4 ACTIVITY DIAGRAM

An Activity Diagram is a visual representation within UML that illustrates the flow of activities and actions in a system or process. It employs various symbols to depict tasks, decision points, concurrency, and control flows. Rectangles signify activities or tasks, while diamonds represent decision points, allowing for conditional branching. Arrows indicate the flow of control from one activity to another. Forks and joins denote concurrency, where multiple activities can occur simultaneously or in parallel. Swimlane segregate activities based on the responsible entity, facilitating clarity in complex processes. Initial and final nodes mark the commencement and completion points of the activity. Decision nodes use guards to determine the path taken based on conditions. Synchronization bars enable the coordination of parallel activities. Control flows direct the sequence of actions, while object flows depict the flow of objects between activities. Activity Diagrams serve as invaluable tools for understanding, modeling, and analyzing complex workflows in systems and processes. They offer a structured visual representation that aids in effective communication and system development.

Key notations for Activity Diagrams:

- **Initial Node:** Represented by a solid circle, it signifies the starting point of the activity.
- **Activity:** Shown as a rounded rectangle, it represents a task or action within the process.
- **Decision Node:** Depicted as a diamond shape, it indicates a point where the process flow can diverge based on a condition.
- **Merge Node:** Represented by a hollow diamond, it signifies a point where multiple flows converge.
- **Fork Node:** Shown as a horizontal bar, it denotes the start of concurrent activities.
- **Join Node:** Depicted as a vertical bar, it marks the point where parallel flows rejoin.
- **Final Node:** Represented by a solid circle with a border, it indicates the end of the activity.
- **Control Flow:** Arrows connecting activities, showing the sequence of actions.
- **Object Flow:** Lines with arrows representing the flow of objects between activities.
- **Swimlane:** A visual container that groups activities based on the responsible entity or system component.
- **Partition:** A horizontal or vertical area within a swimlane, further organizing activities.



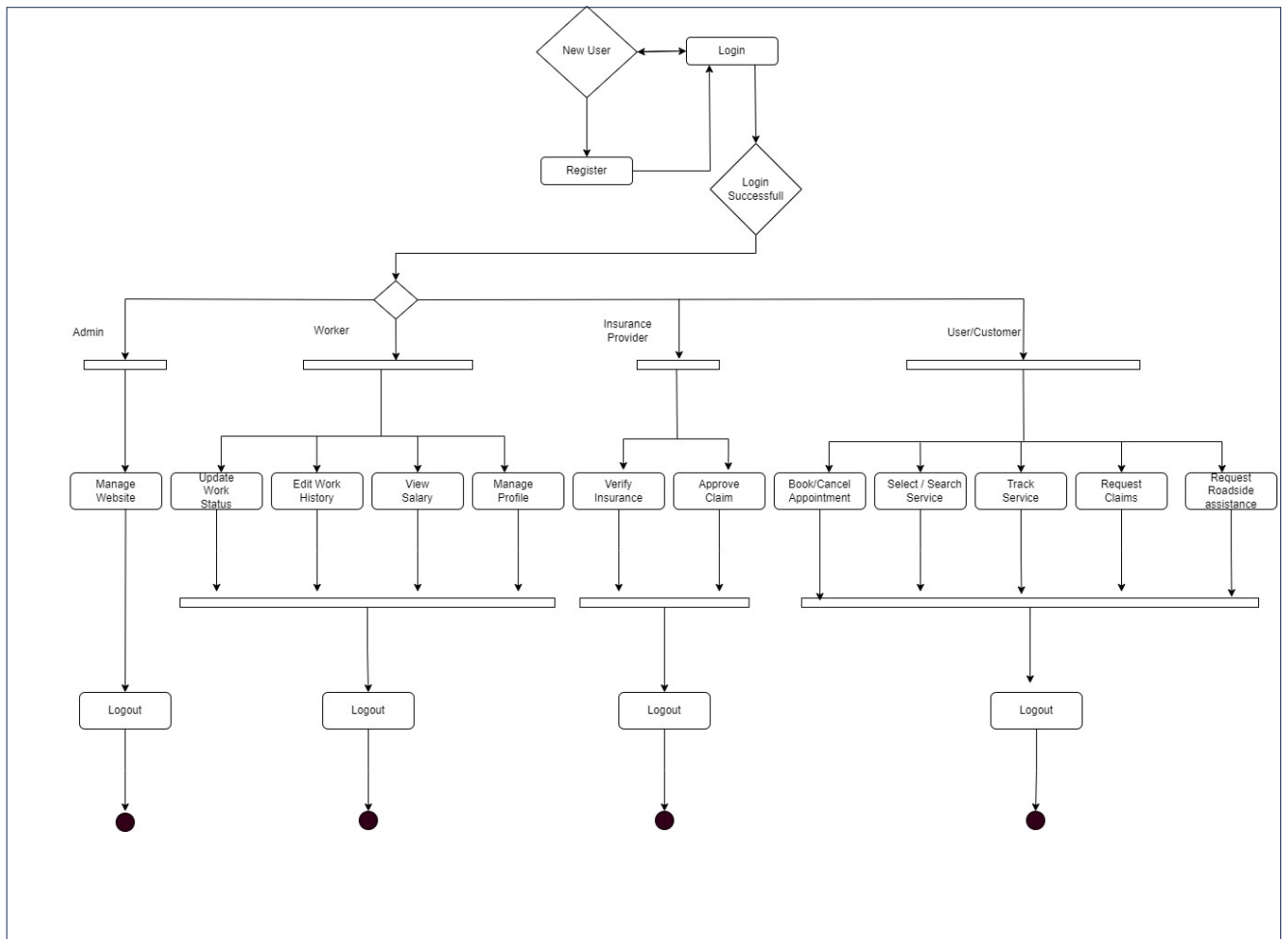


Figure 4: Activity Diagram of VehiCare Hub

### 4.2.5 CLASS DIAGRAM

A Class Diagram, a fundamental tool in UML, visually represents the structure of a system by illustrating classes, their attributes, methods, and relationships. Classes, depicted as rectangles, encapsulate data and behavior within a system. Associations between classes indicate relationships, showcasing how they interact. Multiplicity notations specify the cardinality of associations. Inheritance is denoted by an arrow indicating the subclass inheriting from a super-class. Aggregation and composition illustrate whole-part relationships between classes. Interfaces, depicted as a circle, outline the contract of behavior a class must implement. Stereotypes provide additional information about a class's role or purpose. Dependencies highlight the reliance of one class on another. Association classes facilitate additional information about associations. Packages group related classes together, aiding in system organization. Class Diagrams play a pivotal role in system design, aiding in conceptualizing and planning software architectures. They serve as a blueprint for the development process, ensuring a clear and structured approach to building robust software systems.

Key notations for Class Diagrams:

- **Class:** Represented as a rectangle, it contains the class name, attributes, and methods.
- **Attributes:** Displayed as a list within the class, they describe the properties or characteristics of the class.
- **Methods:** Also listed within the class, they define the behaviors or operations of the class
- **Associations:** Lines connecting classes, indicating relationships and connections between them.
- **Multiplicity Notation:** Indicates the number of instances one class relates to another.
- **Inheritance:** Shown as an arrow, it signifies that one class inherits properties and behaviours from another.
- **Interfaces:** Represented by a dashed circle, they define a contract of behavior that implementing classes must follow.
- **Stereotypes:** Additional labels or annotations applied to classes to provide more information about their role or purpose.
- **Dependencies:** Shown as a dashed line with an arrow, they indicate that one class relies on another in some way.
- **Association Classes:** Represented as a class connected to an association, they provide additional information about the relationship.

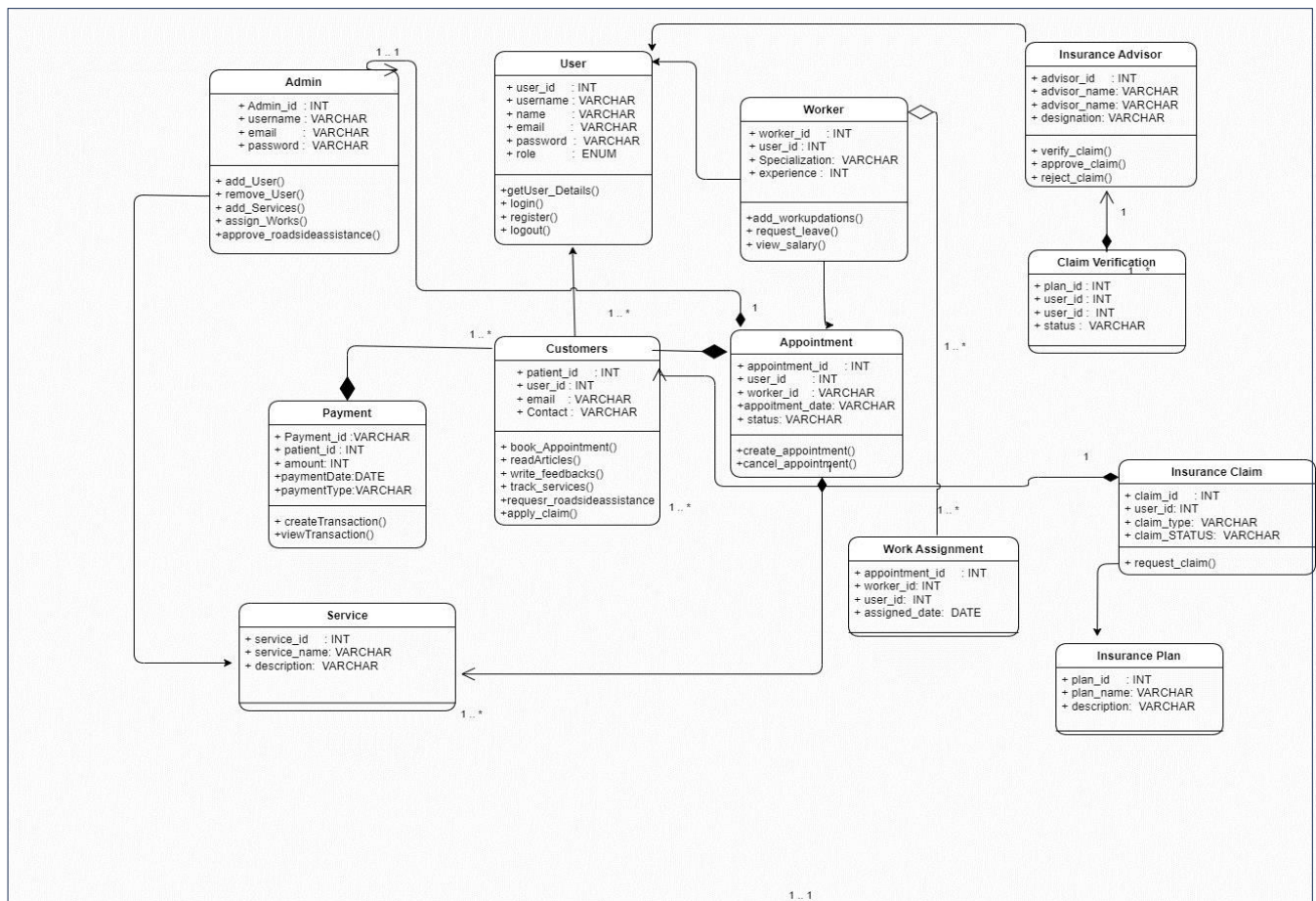


Figure 5: Class Diagram of VehiCare Hub

#### 4.2.6 OBJECT DIAGRAM

An Object Diagram in UML provides a snapshot of a system at a specific point in time, displaying the instances of classes and their relationships. Objects, represented as rectangles, showcase the state and behaviour of specific instances. Links between objects depict associations, highlighting how they interact. Multiplicity notations indicate the number of instances involved in associations. The object's state is displayed through attributes and their corresponding values. Object Diagrams offer a detailed view of runtime interactions, aiding in system understanding and testing. They focus on real-world instances, providing a tangible representation of class relationships. While similar to Class Diagrams, Object Diagrams emphasize concrete instances rather than class definitions. They serve as valuable tools for validating system design and verifying that classes and associations work as intended in practice. Object Diagrams play a crucial role in system validation, ensuring that the system's components and their interactions align with the intended design and requirements.

Key notations for Object Diagrams:

- **Object:** Represented as a rectangle, it contains the object's name and attributes with their values.
- **Links:** Lines connecting objects, indicating associations or relationships between them.
- **Multiplicity Notation:** Indicates the number of instances involved in associations.
- **Attributes with Values:** Displayed within the object, they represent the state of the object at a specific point in time.
- **Role Names:** Labels applied to associations, providing additional information about the nature of the relationship.
- **Object Name:** Represents the name of the specific instance.
- **Association End:** Indicates the end of an association, often with a role name and multiplicity.
- **Dependency Arrow:** Indicates a dependency relationship, where one object relies on another.
- **Composition Diamond:** Represents a stronger form of ownership, where one object encapsulates another.
- **Aggregation Diamond:** Signifies a whole-part relationship between objects.

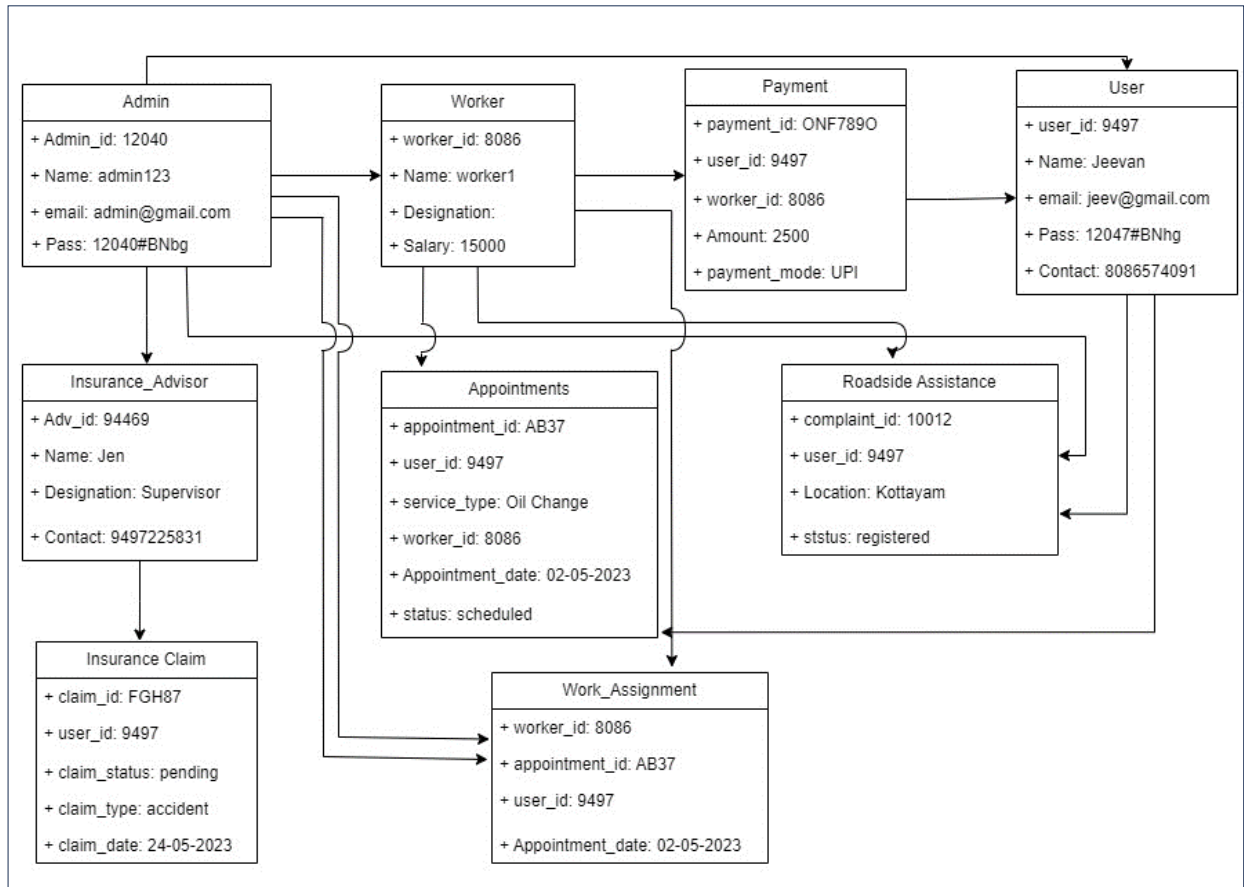


Figure 6: Object Diagram of VehiCare Hub

### 4.2.7 COMPONENT DIAGRAM

A Component Diagram, a vital aspect of UML, offers a visual representation of a system's architecture by showcasing the high-level components and their connections. Components, depicted as rectangles, encapsulate modules, classes, or even entire systems. Dependencies between components are displayed through arrows, signifying the reliance of one component on another. Interfaces, represented by a small circle, outline the services a component offers or requires. Connectors link interfaces to denote the required or provided services. Ports, depicted as small squares, serve as connection points between a component and its interfaces. Stereotypes provide additional information about the role or purpose of a component. Deployment nodes indicate the physical location or environment in which components are deployed. Component Diagrams are instrumental in system design, aiding in the organization and visualization of system architecture. They emphasize the modular structure, facilitating ease of development, maintenance, and scalability of complex software systems. Overall, Component Diagrams play a pivotal role in planning and orchestrating the architecture of sophisticated software applications.

Key notations for Component Diagrams:

- **Component:** Represented as a rectangle, it encapsulates a module, class, or system.
- **Dependency Arrow:** Indicates that one component relies on or uses another.
- **Interface:** Depicted as a small circle, it outlines the services a component offers or requires.
- **Provided and Required Interfaces:** Connectors link provided interfaces to required interfaces.
- **Port:** Shown as a small square, it serves as a connection point between a component and its interfaces.
- **Stereotypes:** Additional labels or annotations applied to components to provide more information about their role or purpose.
- **Assembly Connector:** Represents the physical connection between two components.
- **Artifact:** A physical piece of information that is used or produced by a software development process.
- **Deployment Node:** Indicates the physical location or environment in which components are deployed.
- **Manifestation Arrow:** Indicates the implementation of an interface by a component

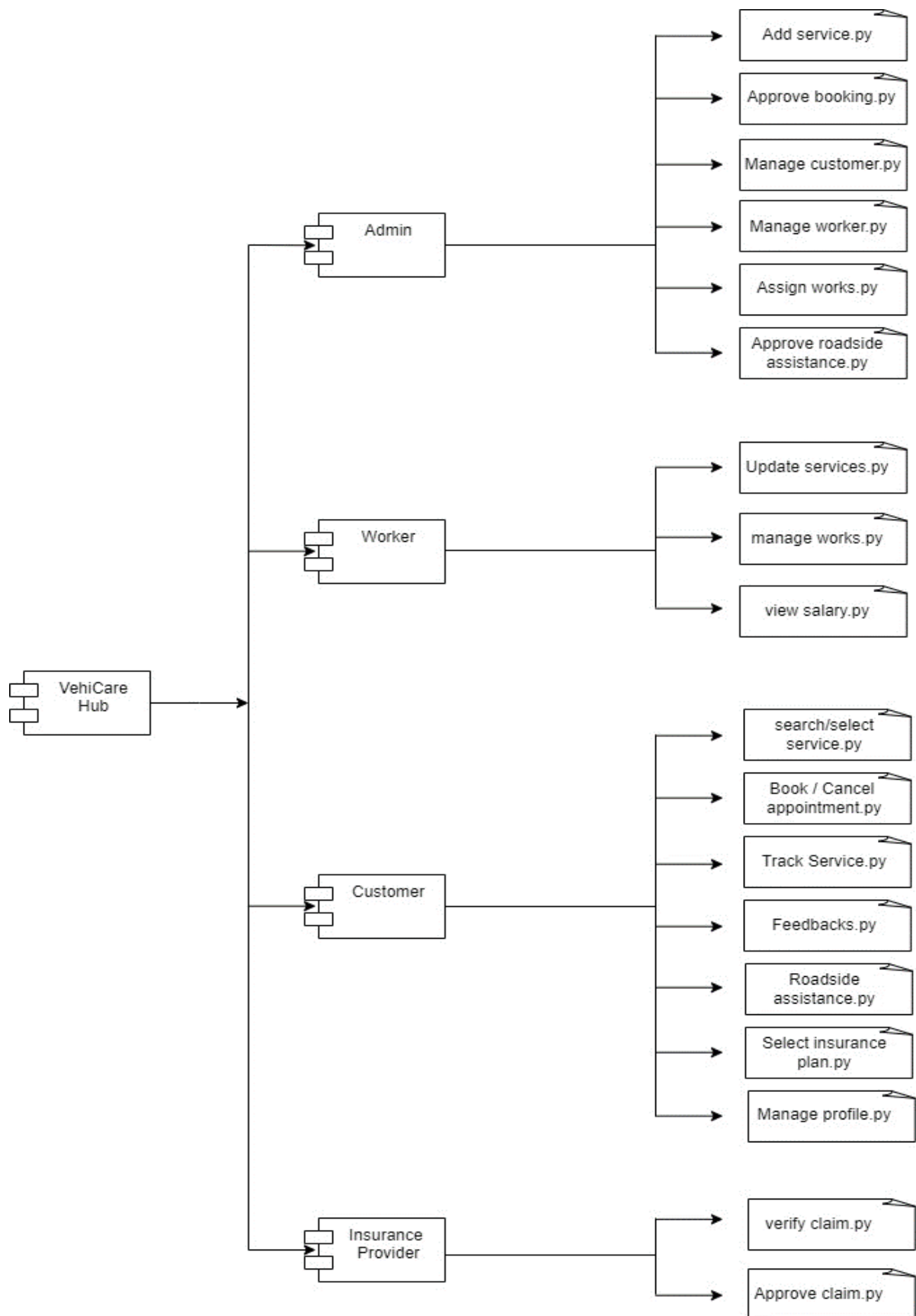
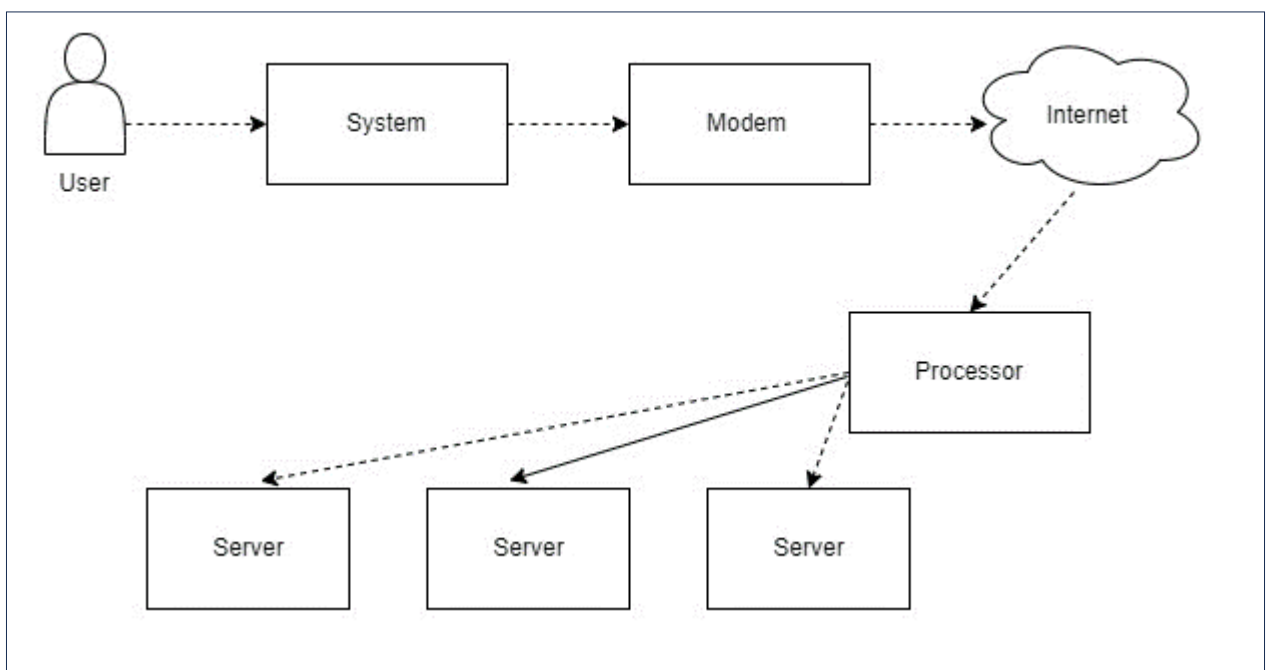


Figure 7: Component Diagram of VehiCare Hub

#### 4.2.8 DEPLOYMENT DIAGRAM

A Deployment Diagram, a crucial facet of UML, provides a visual representation of the physical architecture of a system, showcasing the hardware nodes and software components. Nodes, representing hardware entities like servers or devices, are depicted as rectangles. Artifacts, denoted by rectangles with a folded corner, represent software components or files deployed on nodes. Associations between nodes and artifacts indicate the deployment of software on specific hardware. Dependencies illustrate the reliance of one node on another. Communication paths, shown as dashed lines, represent network connections between nodes. Stereotypes provide additional information about the role or purpose of nodes and artifacts. Deployment Diagrams are instrumental in system planning, aiding in the visualization and organization of hardware and software components. They emphasize the allocation of software modules to specific hardware nodes, ensuring efficient utilization of resources. Overall, Deployment Diagrams play a pivotal role in orchestrating the physical infrastructure of complex software applications.

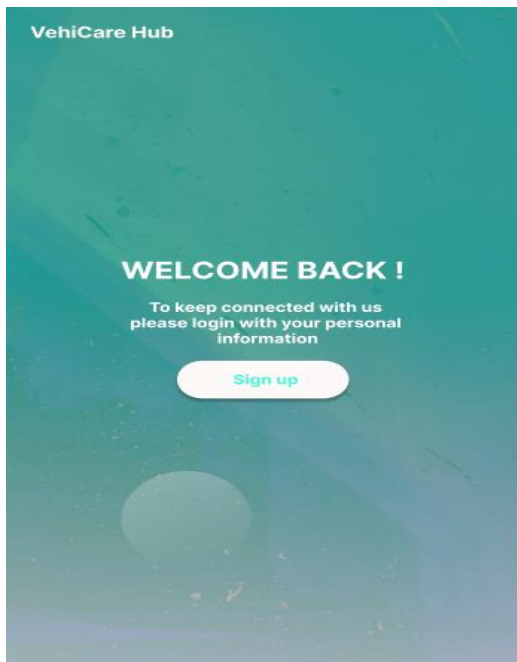


*Figure 8: Deployment Diagram of VehiCare Hub*





## 4.3 USER INTERFACE DESIGN USING FIGMA

### Form Name: Login



**Login with**

or  
use your email for registration

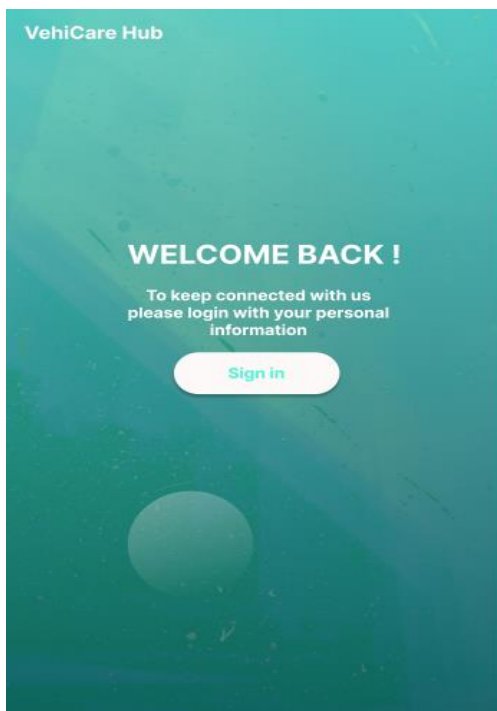
Email

Password



**Log in**

[Forgot Password?](#)

### Form Name: Registration



**Create Account**

or  
use your email for registration

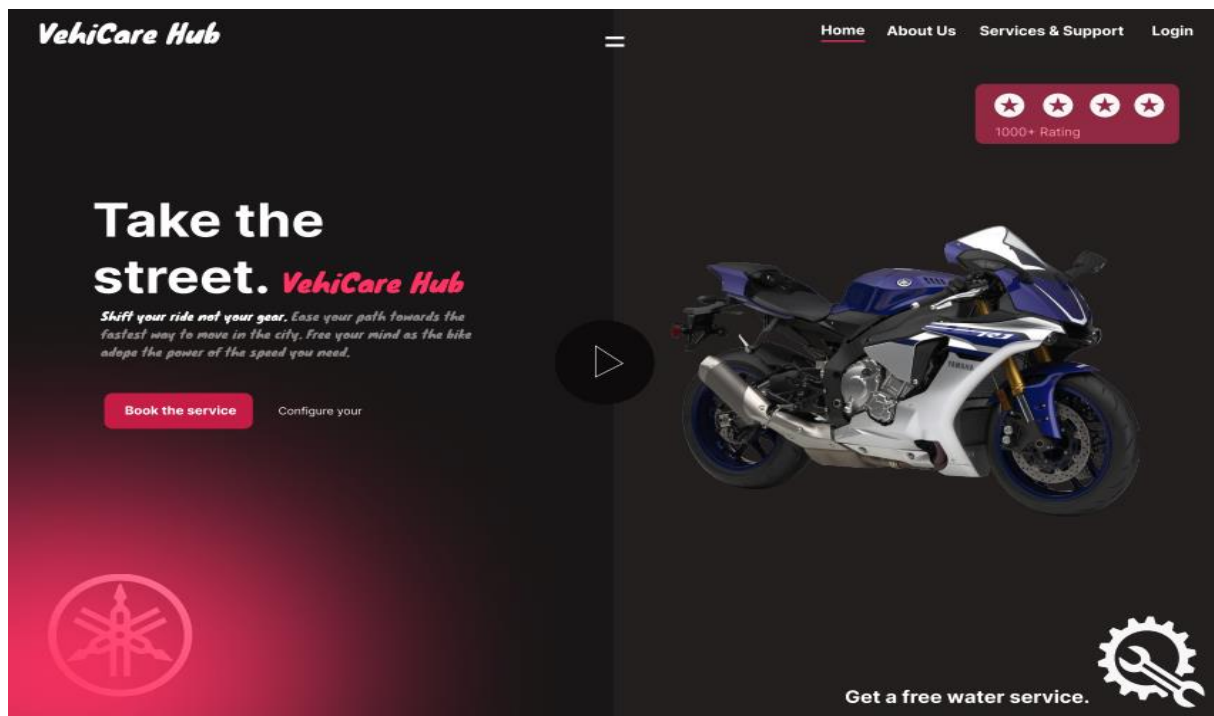
Name

Email

Password

**Sign Up**

## Form Name: Home Page



## Form Name: Booking

The screenshot shows the booking form on the VehiCare Hub website. The header includes the logo 'VehiCare Hub' and navigation links 'Home', 'About Us', and 'Services & Support'. The form is titled 'Book Now' and includes a phone number '+91 8086574091'. It contains several input fields: 'Name', 'Vehicle Name', 'Appointment Date' (with a calendar icon), 'Preferred Time', 'Registration Num', and 'Contact Details'. The 'Contact Details' section has fields for a phone number (prefixed with '+91') and an email address (prefixed with '@gmail.com'). A large red 'BOOK NOW' button is at the bottom right. The background features a red motorcycle and the text 'LANE RACES'.

## **4.4 DATABASE DESIGN**

A database is an organized collection of information that is organized to enable easy accessibility, administration, and overhauls. The security of information could be an essential objective of any database. The database design process comprises of two stages. In the first stage, user requirements are gathered to create a database that meets those requirements as clearly as possible. This is known as information-level design and is carried out independently of any DBMS. In the second stage, the design is converted from an information-level design to a specific DBMS design that will be used to construct the system. This stage is known as physical-level design, where the characteristics of the specific DBMS are considered. Alongside system design, there is also database design, which aims to achieve two main goals: data integrity and data independence.

### **4.4.1 RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)**

A relational database management system (RDBMS) is a popular type of database that organizes data into tables to facilitate relationships with other stored data sets. Tables can contain vast amounts of data, ranging from hundreds to millions of rows, each of which are referred to as records. In formal relational model language, a row is called a tuple, a column heading is an attribute, and the table is a relation. A relational database consists of multiple tables, each with its own name. Each row in a table represents a set of related values.

In a relational database, relationships are already established between tables to ensure the integrity of both referential and entity relationships. A domain  $D$  is a group of atomic values, and a common way to define a domain is by choosing a data type from which the domain's data values are derived. It is helpful to give the domain a name to make it easier to understand the values it contains. Each value in a relation is atomic and cannot be further divided.

In a relational database, table relationships are established using keys, with primary key and foreign key being the two most important ones. Entity integrity and referential integrity relationships can be established with these keys. Entity integrity ensures that no primary key can have null values, while referential integrity ensures that each distinct foreign key value must have a matching primary key value in the same domain. Additionally, there are other types of keys such as super keys and candidate keys.

### **4.4.2 NORMALIZATION**

The simplest possible grouping of data is used to put them together so that future changes can be made with little influence on the data structures. The formal process of normalizing data structures in a way that reduces duplication and fosters integrity. Using the normalization technique,

superfluous fields are removed and a huge table is divided into several smaller ones. Anomalies in insertion, deletion, and updating are also prevented by using it. Keys and relationships are two notions used in the standard form of data modelling. A row in a table is uniquely identified by a key. Primary keys and foreign keys are two different kinds of keys. Primary key is an element, or set of components, in a table that serves as a means of distinguishing between records from the same table. A column in a table known as a foreign key is used to uniquely identify records from other tables. Up to the third normal form, all tables have been normalized.

Normalization is a process in database design that aims to organize data into proper tables and columns, making it easily correlated to the data by the user. This process eliminates data redundancy that can be a burden on computer resources. The main steps involved in normalization include:

- Normalizing the data
- Choosing appropriate names for tables and columns
- Choosing the correct names for the data

By following these steps, a developer can create a more efficient and organized database that is easier to manage and maintain.

### **First Normal Form(1NF)**

- A table is in the First Normal Form if it satisfies the requirement of atomicity, which means that the table's values cannot be divided into smaller, more granular parts, and each attribute or column contains only a single value. In other words, each column should hold only one piece of information, and there should be no repeating groups or arrays of values within a single row.
- The concept of atomicity in this context denotes that a cell within a database cannot contain more than one value, and must exclusively store a single-valued attribute.
- The first normal form in database normalization places limitations on attributes that have multiple values, are composed of multiple sub-attributes, or contain a combination of both. Therefore, in order to satisfy the conditions of the first normal form., these attributes need to be modified or removed, a relation must not have multi-valued or composite attributes, and any such attributes must be split into individual attributes to form atomic values.

E.g., The table contains information pertaining to students, including their roll number, name, course of study, and age.

	rollno	name	course	age
▶	1	Rahul	c/c++	22
	2	Harsh	java	18
	3	Sahil	c/c++	23
	4	Adam	c/c++	22
	5	Lisa	java	24
	6	James	c/c++	19
✱	NULL	NULL	NULL	NULL

*Figure 9: Table not in 1NF*

The table containing the records of students displays a violation of the First Normal Form due to the presence of two distinct values in the course column. To ensure compliance with the First Normal Form, the table has been modified resulting in the formation of a new table.

	rollno	name	course	age
▶	1	Rahul	c	22
	1	Rahul	c++	22
	2	Harsh	java	18
	3	Sahil	c	23
	3	Sahil	c++	23
	4	Adam	c	22
	4	Adam	c++	22
	5	Lisa	java	24
	6	James	c	19
	6	James	c++	19

*Figure 10: Table in 1NF*

The First Normal Form is applied to achieve atomicity in the system, which ensures that each column has unique values. By following this normalization process, the data is organized into individual atomic values, eliminating any redundancies or repeating groups. As a result, data integrity is maintained, and the system can efficiently handle complex data manipulations and updates.

### Second Normal Form(2NF)

To meet requirements of Second Normal Form, a table must satisfy the criteria of First Normal Form as a prerequisite. Furthermore, the table must not exhibit partial dependency, which refers to a scenario where a non-prime attribute is dependent on a proper subset of the candidate key. In other words, the table should have no attributes that are determined by only a portion of the primary key.

Now understand the Second Normal Form with the help of an example.

Consider the table Location:

	cust_id	storeid	store_location
►	1	D1	Toronto
	2	D3	Miami
	3	T1	California
	4	F2	Florida
	5	H3	Texas

*Figure 11: Table not in 2NF*

The Location table currently has a composite primary key consisting of cust id and storied, and its non-key attribute is storing location. However, the store location attribute is directly determined by the storied attribute, which is part of the primary key. As a result, this table does not meet the requirements of second normal form. To address this issue and ensure second normal form is met, it is necessary to separate the Location table into two separate tables. This will result in the creation of two distinct tables that accurately represent the relevant data and relationships: one for customer IDs and store IDs, and another for store IDs and their respective locations.:

	cust_id	storeid
►	1	D1
	2	D3
	3	T1
	4	F2
	5	H3

	storeid	store_location
►	D1	Toronto
	D3	Miami
	T1	California
	F2	Florida
	H3	Texas

*Figure 12: Table in 2NF*

After eliminating the partial functional dependency in the location table, it can be observed that the column storing the location is now entirely dependent on the primary key of the same table. In other words, the location column is fully determined by the primary key, thereby ensuring greater data consistency and integrity in the table.

### Third Normal Form

A table must meet the requirements of Second Normal Form in order to be considered in Third Normal Form, and also fulfill two additional conditions. The second condition states that non-prime attributes should not rely on non-prime characteristics that are not a part of the candidate key within the same table, thus avoiding transitive dependencies. A transitive dependency arises when  $A \rightarrow C$  indirectly, due to  $A \rightarrow B$  and  $B \rightarrow C$ , where  $B$  is not functionally dependent on  $A$ . The main objective of achieving Third Normal Form is to reduce data redundancy and guarantee data integrity.

For instance, let's consider a student table that includes columns like student ID, student name, subject ID, subject name, and address of the student. To comply with the requirements for Third Normal Form, this table must first meet the standards of Second Normal Form and then ensure that there are no transitive dependencies between non-prime attributes.

	stu_id	name	subid	sub	address
▶	1	Arun	11	SQL	Delhi
	2	Varun	12	Java	Bangalore
	3	Harsh	13	C++	Delhi
	4	Keshav	12	Java	Kochi

Figure 13: Table not in 3NF

Now to change the table to the third normal form, you need to divide the table as shown below: Based on the given student table, it can be observed that the `stu_id` attribute determines the `sub_id` attribute, and the `sub_id` attribute determines the subject (`sub`). This implies that there is a transitive functional dependency between `stu_id` and `sub`. As a result, the table does not satisfy the criteria for the third normal form. To adhere to the third normal form, the table must be divided into separate tables where each table represents a unique entity or relationship. In this case, the table can be divided into two tables: one for the student-subject relationship (`stu_id` and `sub_id`), and another for the subject information (`sub_id` and `sub`):

	stu_id	name	subid	address
▶	1	Arun	11	Delhi
	2	Varun	12	Bangalore
	3	Harsh	13	Delhi
	4	Keshav	12	Kochi

	subid	subject
▶	11	SQL
	12	java
	13	C++
	12	Java

Figure 14: Table in 3NF

The two tables illustrate that the non-key attributes are completely determined by and reliant on the primary key. In the first table, the columns for name, sub\_id, and addresses are all exclusively linked to the stu\_id. Likewise, the second table demonstrates that the sub column is entirely dependent on the sub\_id.

### 4.4.3 SANITIZATION

Data sanitization is the process of removing any illegal characters or values from data. In web applications, sanitizing user input is a common task to prevent security vulnerabilities. PHP provides a built-in filter extension that can be used to sanitize and validate various types of external input such as email addresses, URLs, IP addresses, and more. These filters are designed to make data sanitization easier and faster. For example, the PHP filter extension has a function that can remove all characters except letters, digits, and certain special characters (!#\$%&'\*+,-=?\_`{}~@.[]), as specified by a flag.

Web applications often receive external input from various sources, including user input from forms, cookies, web services data, server variables, and database query results. It is important to sanitize all external input to ensure that it is safe and does not contain any malicious code or values.

### 4.4.4 INDEXING

An index is a database structure that enhances the speed of table operations. Indexes can be created on one or more columns to facilitate quick lookups and efficient ordering of records. When creating an index, it's important to consider which columns will be used in SQL queries and to create one or more indexes on those columns. In practice, indexes are a type of table that store a primary key or index field and a pointer to each record in the actual table. Indexes are invisible to users and are only used by the database search engine to quickly locate records. The CREATE INDEX statement is used to create indexes in tables.

When tables have indexes, the INSERT and UPDATE statements take longer because the database needs to insert or update the index values as well. However, the SELECT statements become faster on those tables because the index allows the database to locate records more quickly.



## 4.5 TABLE DESIGN

### 1. Tbl\_users\_customuser

Primary key: **id**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	id	INTEGER (10)	Primary Key	Auto-generated primary key
2	first_name	VARCHAR (50)	NOT NULL	First name of the user
3	last_name	VARCHAR (50)	NOT NULL	Last name of the user
4	username	VARCHAR (50)	Unique	Username of the user
5	email	VARCHAR (50)	Unique	Email address of the user
6	password	VARCHAR (50)	NOT NULL	User's password
7	role	PositiveSmallIntegerField	NOT NULL	User's role
8	is_admin	BooleanField	NOT NULL	Admin status of the user
9	is_staff	BooleanField	NOT NULL	Staff status of the user
10	is_active	BooleanField	NOT NULL	Activation status of the user
11	is_superuser	BooleanField	NOT NULL	Superadmin status of the user

### 2. Tbl\_services

Primary key: **id**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (50)	Primary Key	Auto-generated primary key
2	service_name	VARCHAR (50)	NOT NULL	Name of the service
3	service_description	VARCHAR (50)	NOT NULL	Description of the service
4	service_cost	INTEGER (50)	NOT NULL	Cost of the service
5	service_image	LONG	NOT NULL	Image of the service

### 3. Tbl\_userprofile

Primary key: **id**

Foreign key: **user\_id** references table **Tbl\_users\_customuser**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (15)	Primary Key	Auto-generated primary key
2	user_id	INTEGER (15)	Foreign Key References Tbl_users_customuser(id)	User associated with the profile
3	profile_pic	FileField	NOT NULL	User's profile picture
4	country	VARCHAR (50)	NOT NULL	User's country
5	state	VARCHAR (50)	NOT NULL	User's stste
6	address	VARCHAR (50)	NOT NULL	User's address
7	phone_no	INTEGER (15)	NOT NULL	User's contact number

### 4.Tbl\_users\_worker

Primary key: **id**

Foreign key: **user\_id** references table **Tbl\_users\_customuser**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (15)	Primary Key	Auto-generated primary key
2	user_id	INTEGER (15)	Foreign Key References Tbl_users_customuser(id)	Name of the service
3	specialized_service	VARCHAR (50)	NOT NULL	Description of the service
4	experience	VARCHAR (50)	NOT NULL	Cost of the service
5	is_available	BooleanField	NOT NULL	Image of the service

### 5.Tbl\_service\_appointment

Primary key: **id**

Foreign key: **user\_name\_id** references table **Tbl\_users\_customuser**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (15)	NOT NULL	Auto-generated primary key
2	user_name_id	INTEGER (15)	Foreign Key References Tbl_users_customuser(id)	User associated with the appointment
3	vehicle_model	VARCHAR (50)	NOT NULL	Model of the vehicle
4	service_date	DATE	NOT NULL	Date of the service
5	service_time	TIME	NOT NULL	Time of the service
6	service_type_id	Foreign Key	Foreign Key References Tbl_services_service(id)	Type of the service
7	registration_no	VARCHAR (20)	NOT NULL	Vehicle's registration number
8	appointment_status	VARCHAR (20)	NOT NULL	Status of the appointment

### 6.Tbl\_service\_task

Primary key: **id**

Foreign key: **worker\_id** references table **Tbl\_users\_workers**

Foreign key: **appointment\_id** references table **Tbl\_services\_appointments**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (15)	Primary Key	Auto-generated primary key
2	title	VARCHAR (50)	NOT NULL	Title of the task
3	description	VARCHAR (50)	NOT NULL	Description of the task
4	worker_id	VARCHAR (50)	Foreign Key References Tbl_users_workers(id)	Worker associated with the work
5	appointment_id	VARCHAR (50)	Foreign Key References Tbl_services_appointments(id)	Appointment associated with the task
6	status	VARCHAR (50)	NOT NULL	Status of the work
7	deadline	DATE	NOT NULL	Task's deadline
8	work_done	VARCHAR (50)	NOT NULL	Work's done on the task assigned

9	materials_used	VARCHAR (50)	NOT NULL	Materials used in task
10	additional_notes	VARCHAR (50)	NOT NULL	Additional notes for the work

### 7.Tbl\_users\_leaverequest

Primary key: **id**

Foreign key: **worker\_id** references table **Tbl\_users\_workers**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (15)	Primary Key	Auto-generated primary key
2	worker_id	INTEGER (15)	Foreign Key References Tbl_users_workers(id)	Worker associated with leave
3	start_date	DATE	NOT NULL	Start date of the leave
4	end_date	DATE	NOT NULL	End date of the leave
5	reason	VARCHAR (50)	NOT NULL	Reason for the leave
6	status	VARCHAR (50)	NOT NULL	Status of the leave request

### 8.Tbl\_service\_payment

Primary key: **id**

Foreign key: **user\_id** references table **Tbl\_users\_customuser**

Foreign key: **appointment\_id** references table **Tbl\_services\_appointments**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	INTEGER (15)	Primary Key	Auto-generated primary key
2	user_id	INTEGER (15)	Foreign Key References Tbl_users_customuser(id)	User associated with the payment
3	order_id	VARCHAR (50)	NOT NULL	Razorpay order ID
4	payment_id	VARCHAR (50)	NOT NULL	Razorpay payment ID
5	amount	VARCHAR (50)	NOT NULL	Amount paid
6	appointment_id	INTEGER (15)	Foreign Key References Tbl_services_appointment(id)	Type of the service
8	payment_status	VARCHAR (20)	NOT NULL	Status of the payment

**9.Tbl\_users\_customuser**Primary key: **id**

No:	Field name	Datatype (Size)	Key Constraints	Description of the field
1	Id	Primary Key	NOT NULL	Auto-generated primary key
2	bike_model	VARCHAR (50)	NOT NULL	Model of the bike
3	age	INTEGER (50)	NOT NULL	Age of the bike
4	service_type	VARCHAR (50)	NOT NULL	Type of service
5	service_history	INTEGER (50)	NOT NULL	Service history
6	build_year	INTEGER (50)	NOT NULL	Build year of the bike
7	mileage	INTEGER (50)	NOT NULL	Mileage of the bike
8	last_serviced_date	INTEGER (50)	NOT NULL	Last serviced date
9	current_year	INTEGER (50)	NOT NULL	Current year
10	predicted_time	INTEGER (50)	NOT NULL	Predicted service time

## **CHAPTER 5**

### **SYSTEM TESTING**

## 5.1 INTRODUCTION

System Testing is a crucial phase in the software development life cycle, where the entire system is evaluated against specified requirements and functionalities. It is a comprehensive and structured approach to validate that the software meets its intended objectives. This phase involves testing the integrated system to ensure that all components work together seamlessly. System Testing verifies the system's compliance with both functional and non-functional requirements, including performance, security, and usability. It is conducted in an environment that closely simulates the production environment, providing a real-world scenario for testing. The primary goal of System Testing is to identify and rectify any discrepancies or defects before the software is deployed to end-users. Through rigorous testing processes and thorough documentation, System Testing helps in delivering a reliable and high-quality software product.

Testing is the systematic process of running a program to uncover potential errors or flaws. An effective test case possesses a high likelihood of revealing previously unnoticed issues. A test is considered successful when it reveals a previously unidentified error. If a test functions as intended and aligns with its objectives, it can detect flaws in the software. The test demonstrates that the computer program is operating in accordance with its intended functionality and performing optimally. There are three primary approaches to assessing a computer program: evaluating for accuracy, assessing implementation efficiency, and analyzing computational complexity.

## 5.2 TEST PLAN

A test plan is a thorough document that delineates the strategy, scope, objectives and expected outcomes for a specific testing endeavor. It functions as a guiding framework for carrying out testing activities, guaranteeing that every facet of the testing process is methodically organized. Additionally, the test plan establishes the roles and responsibilities of team members and sets forth the criteria for the successful completion of testing activities. This document plays a pivotal role in ensuring that the testing phase is conducted in a structured and effective manner, ultimately contributing to the overall success of the project. The levels of testing include:

- Integration Testing
- Unit testing
- Validation Testing or System Testing
- Output Testing or User Acceptance Testing
- Automation Testing
- Widget Testing

### **5.2.1 INTEGRATION TESTING**

Integration Testing stands as a pivotal phase in the software testing process, dedicated to scrutinizing the interactions and interfaces among diverse modules or components within a software system. Its primary objective is to ascertain that individual units of code seamlessly converge to create a unified and functional system. In stark contrast to unit testing, which assesses individual units in isolation, integration testing delves into the interplay between these units, with a keen eye for any disparities, communication glitches, or integration hurdles.

By subjecting the integrated components to rigorous testing, development teams aim to affirm that these elements function cohesively, addressing any potential issues before deployment. This systematic evaluation is instrumental in ensuring that the software operates as an integrated whole, free from any unforeseen conflicts or errors that may arise from the convergence of individual modules.

### **5.2.2 UNIT TESTING**

Unit Testing is not only a meticulous examination of discrete units or components within a software system but also an indispensable quality assurance measure. This phase serves as a crucial foundation for the entire software testing process, where the focus lies on isolating and scrutinizing individual units of code. The objective remains unwavering: to verify that each unit performs its designated function accurately, yielding precise outputs for predefined inputs.

Moreover, Unit Testing operates independently, detached from other components, and any external dependencies are either emulated or replaced by "mock" objects, ensuring controlled evaluation. This meticulous process establishes a robust foundation for the software, confirming that each unit functions reliably and adheres meticulously to its predefined behavior.

The significance of Unit Testing cannot be overstated, as it acts as a vanguard against potential discrepancies or errors early in the development cycle. This proactive approach not only fortifies the integrity and reliability of the software but also lays the groundwork for subsequent testing phases, thereby fostering a robust and dependable software solution.

This meticulous process ensures that each unit functions reliably and adheres precisely to its defined behavior. By subjecting individual code units to rigorous scrutiny, any discrepancies or errors are identified and rectified early in the development cycle, bolstering the overall integrity and reliability of the software.



### 5.2.3 VALIDATION TESTING OR SYSTEM TESTING

Validation Testing places the end-users at the forefront of evaluation, ensuring that the software aligns precisely with their anticipated needs and expectations. This phase stands distinct from other testing methodologies, as its primary objective is to authenticate that the software, in its final form, serves its intended purpose seamlessly within the real-world scenarios it was designed for.

As a culmination of the testing process, Validation Testing carries the responsibility of confirming that the software not only meets the defined technical specifications but also delivers genuine value to its users. It does so by scrutinizing the software against the backdrop of actual usage, thereby fortifying its readiness for deployment.

Moreover, in Validation Testing, user stories and acceptance criteria form the cornerstone of assessment. Stakeholders' expectations are meticulously validated, ensuring that every specified requirement is met. Additionally, beta testing, a common practice in this phase, involves a select group of end-users testing the software in a live environment, providing invaluable feedback that can inform potential refinements.

### 5.2.4 OUTPUT TESTING OR USER ACCEPTANCE TESTING

Output Testing, also known as Results Validation, is a critical phase in the software testing process. Its primary focus is to verify the correctness and accuracy of the output generated by a software application. The goal is to ensure that the system produces the expected results for a given set of inputs and conditions. Key aspects of Output Testing include:

- **Comparison with Expected Results:** This phase involves comparing the actual output of the software with the expected or predefined results.
- **Test Case Design:** Test cases are designed to cover various scenarios and conditions to thoroughly evaluate the accuracy of the output.
- **Validation Criteria:** The criteria for validating the output are typically defined during the requirements and design phase of the software development process.
- **Regression Testing:** Output Testing often includes regression testing to ensure that changes or updates to the software do not affect the correctness of the output.
- **Data Integrity:** It verifies that data is processed and displayed correctly, without any corruption or loss.
- **Precision and Completeness:** Output Testing assesses not only the precision of the results but also their completeness in addressing the requirements.
- **Error Handling:** It evaluates how the system handles errors or exceptions and ensures that appropriate error messages are displayed.

### 5.2.5 AUTOMATION TESTING

Automation Testing stands as a cornerstone in the software testing process, harnessing the power of automated tools and scripts to meticulously execute test cases. In stark contrast to manual testing, which hinges on human intervention, automation testing brings forth a streamlined approach, employing software to conduct repetitive, intricate, and time-consuming tests. This methodology not only heightens operational efficiency but also significantly diminishes the likelihood of human error, ensuring precise and reliable results. Moreover, it empowers thorough testing across a diverse array of scenarios and configurations, from browser compatibility to load and performance assessments.

By automating the testing process, organizations can realize a myriad of benefits. It enables the seamless execution of regression tests, providing confidence that existing functionalities remain intact after each round of enhancements or modifications. Furthermore, automation facilitates the concurrent execution of multiple tests, thereby expediting the overall testing cycle. This approach is particularly invaluable in environments characterized by rapid development and frequent software updates, such as Agile and DevOps setups.

### 5.2.6 SELENIUM TESTING

Selenium is an open-source automated testing framework used to verify web applications across different browsers and platforms. Selenium allows for the creation of test scripts in various programming languages such as Java, C#, and Python. Jason Huggins, an engineer at Thought Works, developed Selenium in 2004 while working on a web application that required frequent testing. He created a JavaScript program called "JavaScriptTestRunner" to automate browser actions and improve testing efficiency. Selenium has since evolved and continues to be developed by a team of contributors.

In addition to Selenium, another popular tool used for automated testing is Cucumber. Cucumber is an open-source software testing framework that supports behavior-driven development (BDD). It allows for the creation of executable specifications in a human-readable format called Gherkin. One of the advantages of using Cucumber is its ability to bridge the gap between business stakeholders and technical teams. By using a common language, Cucumber facilitates effective communication and collaboration during the testing process. It promotes a shared understanding of the requirements and helps ensure that the developed software meets the intended business goals.

Cucumber can be integrated with Selenium to combine the benefits of both tools. Selenium is used for interacting with web browsers and automating browser actions, while Cucumber provides a

structured framework for organizing and executing tests. This combination allows for the creation of end-to-end tests that verify the behavior of web applications across different browsers and platforms, using a business-readable and maintainable format.

## Test Case 1: Login Test Case

### Code

```
public class Loginsteps {
    WebDriver driver = null;

    @Given("browser is open")
    public void browser_is_open() {
        System.setProperty("webdriver.gecko.driver", "C:\\Users\\jesso\\eclipse-workspace\\demoart\\src\\test\\resources\\drivers\\geckodriver.exe");
        driver = new FirefoxDriver();
        driver.manage().window().maximize();
    }

    @And("user is on login page")
    public void user_is_on_login_page() {
        driver.navigate().to("http://127.0.0.1:8000/login/");
    }

    @When("user enters username and password")
    public void user_enters_username_and_password() {
        driver.findElement(By.id("username")).sendKeys("Jesso");
        driver.findElement(By.id("password")).sendKeys("12040#BNbg");
    }

    @And("User clicks on login")
    public void user_clicks_on_login() {
        driver.findElement(By.id("submit")).click();
    }

    @Then("user is navigated to the home page")
    public void user_is_navigated_to_the_home_page() {
        if (driver.getCurrentUrl().equals("http://127.0.0.1:8000/home/")) {
            System.out.println("Test passed - User is navigated to the home page");
        } else {
            System.out.println("Test failed - User is not navigated to the home page");
        }
        driver.quit();
    }
}
```

### Screenshot

```
WebDriver BiDi listening on ws://127.0.0.1:3228
Read port: 49423
1698073143492 RemoteAgent WARN TLS certificate errors will be ignored for this session
DevTools listening on ws://127.0.0.1:3228/devtools/browser/39a785b3-47a5-4a87-8c66-84dfd588ee59
    Given browser is open # stepdefenition.Loginsteps.browser_is_open()
    And user is on login page # stepdefenition.Loginsteps.user_is_on_login_page()
console.warn: LoginRecipes: "Falling back to a synchronous message for: http://127.0.0.1:8000."
console.warn: LoginRecipes: "Falling back to a synchronous message for: http://127.0.0.1:8000."
    When user enters username and password # stepdefenition.Loginsteps.user_enters_username_and_password()
JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
    And User clicks on login # stepdefenition.Loginsteps.user_clicks_on_login()
Test passed - User is navigated to the home page
1698073158459 RemoteAgent INFO Perform WebSocket upgrade for incoming connection from 127.0.0.1:49476
```

**Test Report**

Project Name: VehiCare Hub					
Login Test Case					
Test Case ID: 1			Test Designed By: Jesso Joseph		
Test Priority (Low/Medium/High): High			Test Designed Date: 12-10-2023		
Module Name: Login Page			Test Executed By: Sr. Elsin Chakkalackal S H		
Test Title: Verify login with valid email and password			Test Execution Date: 14-10-2023		
Description: Test the Login Page					
Pre-Condition: User has valid email id and password					
Step	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigation to Login Page		Login Page should be displayed	Login page displayed	Pass
2	Provide Valid email	Username: jessojoseph43@gmail.com	User should be able to Login	User Logged in and navigated to the dashboard with records	
3	Provide Valid Password	Password: 12040#BNbg			
4	Click on Sign In button				
Post-Condition: User is validated with database and successfully login into account. The Account session details are logged in database					

## Test Case 2: Update Profile Test Case

### Code

```

public class editsteps {
    WebDriver driver;
    @Given("browser is open for edit profile")
    public void browser_is_open_for_edit_profile() {
        // Update the path to the correct location of geckodriver.exe on your system
        System.setProperty("webdriver.gecko.marionette", "C:\\Users\\jesso\\eclipse-workspace\\demoart\\src\\test\\resources\\drivers\\geckodriver.exe");
        driver = new FirefoxDriver();
        driver.manage().window().maximize();
        driver.get("http://127.0.0.1:8000/login/"); // Navigate to the login page
        WebElement usernameField = driver.findElement(By.id("username"));
        WebElement passwordField = driver.findElement(By.id("password"));
        WebElement loginButton = driver.findElement(By.id("submit"));
        usernameField.sendKeys("Jesso");
        passwordField.sendKeys("12040#BNbg");
        loginButton.click();
    }
    @And("user is on the edit profile page")
    public void user_is_on_edit_profile_page() {
        // This step is unchanged
        driver.navigate().to("http://127.0.0.1:8000/editprofile/"); // Replace with the actual URL for the edit profile page
    }
    @When("user enters new profile information")
    public void user_enters_new_profile_information() {
        // Locate and interact with the form fields to enter new profile information
        WebElement firstNameField = driver.findElement(By.name("first_name"));
        WebElement lastNameField = driver.findElement(By.name("last_name"));
        WebElement phoneField = driver.findElement(By.name("phone_no"));
        WebElement addressField = driver.findElement(By.name("address"));
        WebElement stateField = driver.findElement(By.name("state"));
        WebElement countryField = driver.findElement(By.name("country"));
        firstNameField.clear();
        firstNameField.sendKeys("New First Name");
        lastNameField.clear();
        lastNameField.sendKeys("New Last Name");
        phoneField.clear();
        phoneField.sendKeys("1234567890");
        addressField.clear();
        addressField.sendKeys("New Address");
        stateField.clear();
        stateField.sendKeys("New State");
        countryField.clear();
        countryField.sendKeys("New Country");
    }
    @And("User clicks on save profile")
    public void user_clicks_on_save_profile() {
        // Find and Click the Save Profile button
        WebElement saveButton = driver.findElement(By.name("submit"));
        saveButton.click();
    }
    @Then("user's profile is updated")
    public void user_profile_is_updated() {
        boolean isProfileUpdated = true; // You can set this based on your application's logic

        if (isProfileUpdated) {
            System.out.println("Test passed - User profile is updated successfully");
        } else {
            System.out.println("Test failed - User profile update was not successful");
        }
    }
}

```

### Screenshot

```

JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
Given browser is open for edit profile # stepdefenition.editsteps.browser_is_open_for_edit_profile()
JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
And user is on the edit profile page # stepdefenition.editsteps.user_is_on_edit_profile_page()
When user enters new profile information # stepdefenition.editsteps.user_enters_new_profile_information()
JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
And User clicks on save profile # stepdefenition.editsteps.user_clicks_on_save_profile()
Test passed - User profile is updated successfully
Then user's profile is updated # stepdefenition.editsteps.user_profile_is_updated()

1 Scenarios (1 passed)
5 Steps (5 passed)
0m25.790s

```

**Test report**

Project Name: VehiCare Hub					
Update Profile Test Case					
Test Case ID: 2			Test Designed By: Jesso Joseph		
Test Priority (Low/Medium/High): High			Test Designed Date: 15-10-2023		
Module Name: Update profile Page			Test Executed By: Sr. Elsin Chakkalackal S H		
Test Title: Updating User Profile			Test Execution Date: 17-10-2023		
Description: Test the Update Profile Page					
Pre-Condition: User's profile is successfully updated					
Step	Test Step	Test Data	Expected Result	Actual Result	Status (Pass/Fail)
1	Navigation to update profile Page		The Update Profile Page should be displayed.	Signup page displayed	Pass
2	Provide first name	First Name: New First Name	User enters first name	User entered the new first name.	Pass
3	Provide second name	Last Name: New Last Name	User enters second name	User entered the new last name.	Pass
4	Provide Email address	Email Address: newemail@example.com	User enters the new email address.	User entered the new email address.	Pass
5	Provide Phone Number	Phone Number: 1234567890	User enters the new phone number.	User entered the new phone number.	Pass
6	Provide Address	Address: New Address	User enters the new address.	User entered the new address.	Pass
7	Provide State	State: New State	User enters the new state.	User entered the new state.	Pass
8	Provide Country	Provide Country	User enters the new country.	User entered the new country.	Pass
9	Click on Save button		User should be able to save the profile.	Profile updated successfully.	Pass
Post-Condition: User's profile is successfully updated, and the updated profile details are registered in the database.					

## Test Case 3: Change Password Test Case

### Code

```
public class ChangePasswordSteps {
    WebDriver driver;
    @Given("browser is open for change password")
    public void browser_is_open_for_change_password() {
        // Update the path to the correct location of geckodriver.exe on your system
        System.setProperty("webdriver.gecko.marionette", "C:\\Users\\jesso\\eclipse-workspace\\demoart\\src\\test\\resources\\drivers\\geckodriver.exe");
        driver = new FirefoxDriver();
        driver.manage().window().maximize();
        driver.get("http://127.0.0.1:8000/login/"); // Navigate to the login page
        WebElement usernameField = driver.findElement(By.id("username"));
        WebElement passwordField = driver.findElement(By.id("password"));
        WebElement loginButton = driver.findElement(By.id("submit"));
        usernameField.sendKeys("Jesso");
        passwordField.sendKeys("12040#BNbg");
        loginButton.click();
    }
    @And("user is on the change password page")
    public void user_is_on_change_password_page() {
        driver.navigate().to("http://127.0.0.1:8000/change_password/"); // Replace with the actual URL for the change password page
    }
    @When("user provides new password {string}")
    public void user_provides_new_password(String newPassword) {
        WebElement newPasswordField = driver.findElement(By.id("new-password"));
        newPasswordField.clear();
        newPasswordField.sendKeys("12040#BNbg");
    }
    @And("user confirms new password {string}")
    public void user_confirms_new_password(String confirmPassword) {
        WebElement confirmPasswordField = driver.findElement(By.id("confirm-password"));
        confirmPasswordField.clear();
        confirmPasswordField.sendKeys("12040#BNbg");
    }
    @And("user clicks on update password button")
    public void user_clicks_on_update_password_button() {
        WebElement updateButton = driver.findElement(By.id("submit"));
        updateButton.click();
    }
    @Then("password is updated successfully")
    public void password_is_updated_successfully() {
        boolean isPasswordUpdated = checkIfPasswordIsUpdated(); // You need to implement this method

        if (isPasswordUpdated) {
            System.out.println("Test passed - Password is updated successfully");
        } else {
            System.out.println("Test failed - Password update was not successful");
        }
    }
    private boolean checkIfPasswordIsUpdated() {
        return true;
    }
}
```

### Screenshot

```
JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
Given browser is open for change password # stepdefenition.ChangePasswordSteps.browser_is_open_for_change_password()
JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
And user is on the change password page # stepdefenition.ChangePasswordSteps.user_is_on_change_password_page()
When user provides new password "newpassword123" # stepdefenition.ChangePasswordSteps.user_provides_new_password(java.lang.String)
And user confirms new password "newpassword123" # stepdefenition.ChangePasswordSteps.user_confirms_new_password(java.lang.String)
console.warn: LoginRecipes: "Falling back to a synchronous message for: http://127.0.0.1:8000."
JavaScript error: http://127.0.0.1:8000/static/js/main.js, line 78: TypeError: startRecordingButton is null
And user clicks on update password button # stepdefenition.ChangePasswordSteps.user_clicks_on_update_password_button()
Test passed - Password is updated successfully
Then password is updated successfully # stepdefenition.ChangePasswordSteps.password_is_updated_successfully()

1 Scenarios (1 passed)
6 Steps (6 passed)
0m20.330s
```

**Test report**

Project Name: VehiCare Hub					
Change Password Test Case					
Test Case ID: 3			Test Designed By: Jesso Joseph		
Test Priority (Low/Medium/High): High			Test Designed Date: 18-10-2023		
Module Name: Change Password			Test Executed By: Sr. Elsin Chakkalackal S H		
Test Title: Changing User Password			Test Execution Date: 20-10-2023		
Description: Test the Change Password functionality					
Pre-Condition: User is logged in and has a valid password					
Step	Test Step	Test Data	Expected Result	Actual Result	Status(Pass/Fail)
1	Navigation to Change Password		Change Password Page should be displayed	Change Password page displayed	Pass
2	Enter New Password	Password: 12040#BNg	New Password accepted	New Password accepted	Pass
3	Confirm New Password	Password: 12040#BNbg	Passwords match	Passwords match	Pass
4	Click Update Password		Password updated successfully	Password updated successfully	Pass
Post-Condition: User's password is successfully updated in the database					



## Test Case 4: Add Services Test Case

### Code

```
public class AddServiceSteps {
    WebDriver driver;
    WebDriverWait wait;
    @Given("the user is on the service creation page")
    public void the_user_is_on_the_service_creation_page() {
        System.setProperty("webdriver.gecko.driver", "C:\\Users\\jesso\\eclipse-workspace\\demoart\\src\\test\\resources\\drivers\\geckodriver.exe");
        FirefoxOptions options = new FirefoxOptions();
        FirefoxProfile profile = new FirefoxProfile();
        options.setProfile(profile);

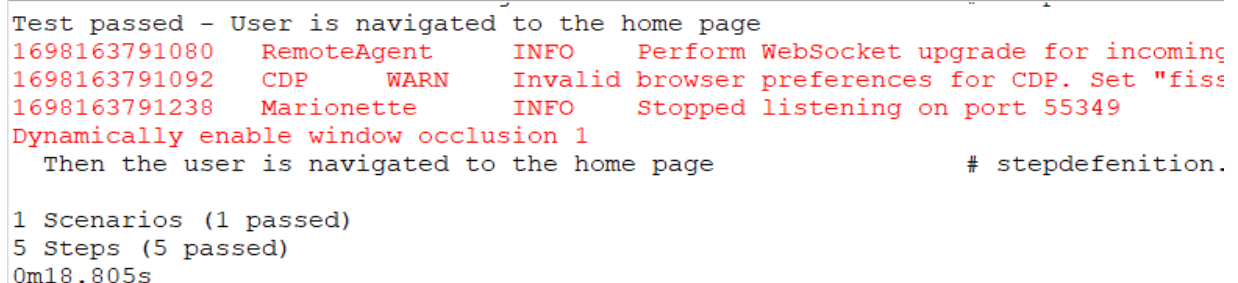
        driver = new FirefoxDriver(options);
        driver.manage().window().maximize();
        wait = new WebDriverWait(driver, Duration.ofSeconds(10));
    }
    @And("the user is on the add service page")
    public void the_user_is_on_the_add_service_page() {
        driver.get("http://127.0.0.1:8000/add-service/");
    }
    @When("the user provides service details")
    public void the_user_provides_service_details() {
        WebElement serviceNameField = driver.findElement(By.name("service_name"));
        WebElement serviceDescriptionField = driver.findElement(By.name("service_description"));
        WebElement serviceCostField = driver.findElement(By.name("service_cost"));
        WebElement serviceImageField = driver.findElement(By.name("service_image"));
        serviceNameField.clear();
        serviceDescriptionField.clear();
        serviceCostField.clear();
        serviceImageField.clear();
        serviceNameField.sendKeys("Example Service");

        serviceDescriptionField.sendKeys("This is an example service description");
        serviceCostField.sendKeys("50");
        serviceImageField.sendKeys("D:\\pro\\vehicarehub\\static\\images\\testimonial-3.jpg");
        // You can use a file input element to upload an image
        // For simplicity, this example does not include the file upload code.
    }
    @And("the user clicks on the create button")
    public void the_user_clicks_on_the_create_button() {
        // Wait for the spinner to disappear
        WebDriverWait wait = new WebDriverWait(driver, Duration.ofSeconds(30));
        wait.until(ExpectedConditions.invisibilityOfElementLocated(By.id("spinner")));

        // Now, click the "Create" button
        driver.findElement(By.id("submit")).click();
    }
    @Then("the service should be created successfully")
    public void the_service_should_be_created_successfully() {
        // Add verification logic here
        // You can check for success messages or other elements that indicate successful creation
        // If the service is created successfully, you can print a success message
        System.out.println("Test passed - Service created successfully");

        // Close the WebDriver
        driver.quit();
    }
}
```

### Screenshot



The screenshot displays the Selenium IDE test results for the 'Test Case 4: Add Services Test Case'. The test passed, and the user is navigated to the home page. The results show the following steps and their status:

Step	Step Name	Status	Message
1	Scenarios (1 passed)	Passed	
5	Steps (5 passed)	Passed	
0m18.805s			

The test results also show the following log messages:

```
Test passed - User is navigated to the home page
1698163791080 RemoteAgent INFO Perform WebSocket upgrade for incoming
1698163791092 CDP WARN Invalid browser preferences for CDP. Set "fiss
1698163791238 Marionette INFO Stopped listening on port 55349
Dynamically enable window occlusion 1
Then the user is navigated to the home page # stepdefinition.
```

**Test report**

Project Name: VehiCare Hub					
Add Services Test Case					
Test Case ID: 4			Test Designed By: Jesso Joseph		
Test Priority (Low/Medium/High): High			Test Designed Date: 22-10-2023		
Module Name: Add Services			Test Executed By: Sr. Elsin Chakkalackal S H		
Test Title: Test the functionality of adding a new service			Test Execution Date: 24-10-2023		
Description: User is on the service creation page					
Pre-Condition: User is logged in and has a valid password					
Step	Test Step	Test Data	Expected Result	Actual Result	Status(Pass/Fail)
1	The user is on the service creation page		The service creation page should be displayed	The service creation page is displayed	Pass
2	Provide service name	Service Name: Demoserv	User entered service name	Name accepted	Pass
3	Provide service description	Service Description: This is an example service description	User entered description	Description accepted	Pass
4	Provide service cost	Service cost: 250	User entered cost	Cost accepted	
5	The user clicks on the create button		The user clicks on the create button	The user clicks on the create button	Pass
Post-Condition: The test case "Adding a New Service" has been executed successfully, and all test steps have passed. A new service was created successfully.					

## **CHAPTER 6**

# **IMPLEMENTATION**

## 6.1 INTRODUCTION

During the implementation stage of a project, the theoretical design is transformed into a functional system, which is essential in achieving a successful outcome and user confidence in the system's effectiveness and accuracy. User training and documentation are the primary focus during this stage, and conversion typically takes place around the same time as user training or afterwards. Implementation involves converting the new system design into an operational one and can create chaos and confusion if not carefully planned or controlled. The implementation process encompasses all activities necessary to convert from the existing system to the new system, whether it be a totally new or modified system. It is crucial to provide a reliable system that meets organizational requirements. The system can only be implemented after thorough testing is done, and it is found to be working according to specifications. Feasibility checks are performed by system personnel, and the more complex the system being implemented, the more involved the system analysis and design effort required for education and training, system testing, and changeover.

The implementation state involves the following tasks:

- Careful planning.
- Investigation of system and constraints.
- Design of methods to achieve the changeover.

## 6.2 IMPLEMENTATION PROCEDURES

Implementation of software refers to the final installation of the package in its real environment, to the satisfaction of the intended uses and the operation of the system. In many organizations someone who will not be operating it, will commission the software development project. In the initial stage people doubt about the software but we have to ensure that the resistance does not build up, as one has to make sure that:

- The active user must be aware of the benefits of using the new system.
- Their confidence in the software is built up.
- Proper guidance is imparted to the user so that he is comfortable in using the application.

Before going ahead and viewing the system, the user must know that for viewing the result, the server program should be running in the server. If the server object is not up running on the server, the actual process will not take place.

### **6.2.1 USER TRAINING**

The goal of user training is to give users the confidence to test and alter computer-based systems in order to finally accomplish the intended goals. Training becomes more important as systems get more complicated. As part of the user training process, participants are exposed to a variety of crucial tasks like data entering, handling error alerts, querying databases, calling up routines to generate reports, among others.

### **6.2.2 TRAINING ON THE APPLICATION SOFTWARE**

The new application software requires users to first complete a basic computer literacy training course before utilizing it. They should be shown how to access help resources, traverse the software panels, correct entry errors, and update data that has already been entered. Specific topics pertaining to the user group and their function in using the system or its components should also be covered in the training. The training for the program should be adapted to the requirements of various user groups and hierarchical levels.

### **6.2.3 SYSTEM MAINTENANCE**

The software maintenance phase is an essential part of the software development life cycle and occurs after a software product has been successfully implemented and is performing useful work. Maintenance is necessary to ensure that the system remains adaptable to changes in the system environment. While finding mistakes is a part of software maintenance, it is not the only task involved. There are many other activities involved in maintenance, such as updating documentation, fixing bugs, enhancing existing features, and adding new features. Effective maintenance can help ensure that the software remains functional, reliable, and efficient over time.

## **CHAPTER 7**

### **CONCLUSION AND FUTURE SCOPE**

## 7.1 CONCLUSION

The VehiCare Hub platform represents a transformational initiative that promises to overhaul traditional vehicle servicing processes. This online system enables customers to conveniently book appointments, track service status, make payments and more. For service providers, it optimizes appointment scheduling, workforce allocation and operations management. By harnessing technology to integrate fragmented workflows, VehiCare Hub delivers enhanced efficiency, transparency, and convenience to all stakeholders. Customers can access services from anywhere without visiting workshops. Real-time order tracking and voice-based worker updates add transparency. Digital payments improve security. Recommendation systems assist purchase decisions. Advanced features like data-driven analytics help workshops gain operational insights to serve customers better. Integrations with insurance and roadside assistance widen the platform's scope. Effective change management and training will drive adoption across users.

In summary, VehiCare Hub ushers the antiquated vehicle servicing industry into the digital era through intelligent integration and automation. This project shall set a precedent on how technology can help revolutionize traditional domains to deliver exceptional user experience and satisfaction.

## 7.2 FUTURE SCOPE

The Vehicle Service Booking System project presents a multitude of opportunities for future expansion and enhancements. To further improve user experience and meet the evolving needs of the automotive service industry, the platform could consider various avenues. These include the development of a dedicated mobile application, offering users increased convenience and accessibility. Additionally, the incorporation of predictive maintenance capabilities through the analysis of vehicle telemetry data could enable the system to forecast repair requirements proactively. Furthermore, the inclusion of invoicing and billing systems for service providers, along with the expansion of services to include car wash, towing, rentals, and more, could transform the platform into a comprehensive automobile ecosystem. The utilization of artificial intelligence and machine learning for intelligent appointment scheduling optimization promises to streamline operations further.

Extending the platform's reach to encompass original equipment manufacturers (OEMs) and insurance providers could establish a more extensive network. Multilingual support is essential for reaching a wider user base. An analytics dashboard tailored for workshops would provide

invaluable data-driven insights into operations. The introduction of a mobile mechanic service for emergency roadside assistance could be a critical asset. Finally, implementing loyalty programs and rewards could enhance user engagement.

In essence, the Vehicle Service Booking System project possesses immense potential for growth and continuous improvement through the integration of emerging technologies, ensuring maximum value delivery within the automotive service ecosystem.

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## **CHAPTER 8**

### **BIBLIOGRAPHY**

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**REFERENCES:**

- Gary B. Shelly, Harry J. Rosenblatt, “*System Analysis and Design*”, 2009.
- Roger S Pressman, “*Software Engineering*”, 1994.
- Pankaj Jalote, “*Software engineering: a precise approach*”, 2006.
- IEEE Std 1016 Recommended Practice for Software Design Descriptions.

**WEBSITES:**

- [www.w3schools.com](http://www.w3schools.com)
- <https://stackoverflow.com/>
- <https://app.diagrams.net/>

## **CHAPTER 9**

### **APPENDIX**

## 9.1 SAMPLE CODE

### Veiw.py

```

from forms import AppointmentForm
from forms import ServiceForm
from django.shortcuts import render, redirect
from django.shortcuts import render, redirect, get_object_or_404, HttpResponseRedirect
from django.contrib.auth.models import User, auth
from django.contrib.auth import authenticate, login as auth_login, logout
from django.contrib import messages
from django.shortcuts import redirect
from django.contrib.auth import get_user_model
from .models import Service, UserProfile, Worker, Slot, CustomUser, Appointment
from forms import AppointmentForm
from django.contrib.auth.decorators import login_required
from django.contrib import messages
from django.urls import reverse
from django.contrib.auth import update_session_auth_hash
from django.contrib import messages
from datetime import datetime, time, timedelta
from django.contrib.admin.views.decorators import staff_member_required
from django.db import transaction
from django.db.models import Q
from django.http import JsonResponse
from django.shortcuts import render

```

```
User = get_user_model()
```

### 1. services.py

```

@login_required
def search_services(request):
    query = request.GET.get('query')
    print("Query:", query)

    services_data = []

    if query:
        services = Service.objects.filter(
            Q(service_name__icontains=query) | Q(service_cost__icontains=query)
        )

        for service in services:
            service_dict = {
                'id': service.pk,
                'name': service.service_name,
                'cost': service.service_cost,
                'image': service.service_image.url,
            }
            services_data.append(service_dict)

    return JsonResponse({'services': services_data})

```

## 2. Book\_appointment.py

```

@login_required
def book_appointment(request):
    if request.method == 'POST':
        form = AppointmentForm(request.POST)
        if form.is_valid():
            user = request.user
            service_date = form.cleaned_data['service_date']
            has_active_booking = Appointment.objects.filter(user_name=user,
appointment_status='Scheduled').exists()

            if has_active_booking:
                return render(request, 'book_appointment.html', {'form': form, 'service_types':
Service.objects.all(), 'has_active_booking': True})
                existing_booking = Appointment.objects.filter(user_name=user, service_date=service_date).exists()

            if existing_booking:
                # If the user already has a booking for the selected date, show a warning
                return render(request, 'book_appointment.html', {'form': form, 'service_types':
Service.objects.all(), 'existing_booking': True})

            # Check if the maximum limit (9 appointments) is reached for the selected date
            appointments_count = (
                Appointment.objects
                .filter(service_date=service_date)
                .annotate(day=ExtractDay('service_date'))
                .values('day')
                .annotate(count=Count('id'))
                .order_by('day')
            )

            if not appointments_count:
                appointment = form.save(commit=False)
                appointment.user_name = user
                appointment.appointment_status = 'Pending' # Set the appointment status as 'Pending'
                appointment.save()

                send_appointment_confirmation_email(user.email, appointment)

                return redirect('payment', appointment_id=appointment.id)

            else:
                # Check if the count for the selected date is less than 9
                if appointments_count[0]['count'] < 9:
                    # If the limit is not reached, book the appointment
                    appointment = form.save(commit=False)
                    appointment.user_name = user
                    appointment.appointment_status = 'Pending' # Set the appointment status as 'Pending'
                    appointment.save()

                    send_appointment_confirmation_email(user.email, appointment)

                    return redirect('payment', appointment_id=appointment.id)
                else:
                    # If the limit is reached, show a warning

```

---

```

        error_message = 'Appointment limit for the selected date is reached.'
        return render(request, 'book_appointment.html', {'form': form, 'service_types':
Service.objects.all(), 'error_message': error_message})
    else:
        form = AppointmentForm()

    # Get service types from the Service model
    service_types = Service.objects.all()

    context = {
        'form': form,
        'service_types': service_types,
    }

    return render(request, 'book_appointment.html', context)

def send_appointment_confirmation_email(email, appointment):
    subject = 'Appointment Confirmation'
    message = f"Hello,\n\n"
    message += f"Welcome to VehiCare Hub\n\n"
    message = f'Your appointment for the vehicle {appointment.registration_number} on
{appointment.service_date} has been successfully scheduled.'
    message += f'Thank you for choosing our services!\n\n'
    message += f'Best regards,\nThe VehiCare Hub Team'
    from_email = 'jessojoseph2024@mca.ajce.in' # Replace with your email
    recipient_list = [email]
    send_mail(subject, message, from_email, recipient_list)

```

### 3. Edit\_profile.py

```

@login_required
def editprofile(request):
    user = request.user
    try:
        user_profile = UserProfile.objects.get(user=user)
    except UserProfile.DoesNotExist:
        # Handle the case when the user profile does not exist
        raise Http404("User profile not found")

    if request.method == 'POST':
        user.first_name = request.POST.get('first_name')
        user.last_name = request.POST.get('last_name')
        user.save()
        if 'profile_pic' in request.FILES:
            user_profile.profile_pic = request.FILES['profile_pic']
            user_profile.address = request.POST.get('address')
            user_profile.phone_no = request.POST.get('phone_no')
            user_profile.state = request.POST.get('state')
            user_profile.country = request.POST.get('country')
            user_profile.save()
            return redirect('viewprofile')
    context = {
        'user': user,
        'user_profile': user_profile
    }
    return render(request, 'editprofile.html', context)

```

---

#### 4. login.py

```
def login(request):
    if request.method == "POST":
        username_or_email = request.POST.get('EU')
        password = request.POST.get('pwd')

        user = None
        if '@' in username_or_email:
            # User is trying to log in using email
            user = CustomUser.objects.filter(email=username_or_email).first()
        else:
            # User is trying to log in using username
            user = CustomUser.objects.filter(username=username_or_email).first()

        if user is not None:
            user = authenticate(
                request, username=user.username, password=password)
            if user is not None:
                auth_login(request, user)

            if user.role == CustomUser.WORKER:
                return redirect('workerdashboard') # Redirect workers to the worker dashboard
            else:
                return redirect('index') # Redirect customers to the index page
        else:
            messages.error(request, "Invalid username or password.")
            return redirect('login')
    else:
        messages.error(request, "User not found.")
        return redirect('login')
    else:
        return render(request, 'login.html')
```

#### 5. signup.py

```
def signup(request):
    if request.method == 'POST':
        first_name = request.POST.get('first_name')
        last_name = request.POST.get('last_name')
        username = request.POST.get('username')
        email = request.POST.get('email')
        password = request.POST.get('pwd')
        Cpassword = request.POST.get('cpwd')

        if password == Cpassword:
            if User.objects.filter(username=username).exists():
                messages.info(request, "Username already taken!")
                return redirect('/signup')

            elif User.objects.filter(email=email).exists():
                messages.info(request, "Email already taken!")
                return redirect('/signup')

        else:
            user_reg = User.objects.create user(
```

```

        first_name=first_name, last_name=last_name, username=username, email=email,
password=password)
        user_reg.save()
        user_profile = UserProfile(user=user_reg)
        user_profile.save()
        messages.info(request, "Registered Successfully")
        return redirect('login')
    else:
        return redirect('/signup')
else:
    return render(request, 'signup.html')

```

## 6. add\_worker.py

```

def addWorker(request):
    if request.method == 'POST':
        # Get data from the form
        username = request.POST.get('username')
        email = request.POST.get('email')
        password = request.POST.get('password')

        if User.objects.filter(email=email).exists():
            messages.error(request, 'Email already exists. Please use a different email address.')
        else:
            # Create a new user
            user = User.objects.create(username=username, email=email)
            user.set_password(password)
            user.is_active = True
            user.role = CustomUser.WORKER
            user.save()

            logger.info(f"User {username} created successfully.")
            send_welcome_email(user.email, password, user.username)

            # Create a Worker instance
            worker = Worker(user=user)
            worker.save()

            # Create a UserProfile
            user_profile = UserProfile(user=user)
            user_profile.save()

            messages.success(request, 'Worker created successfully.')
            return redirect('addworker') # Replace 'addworker' with your desired URL

    return render(request, 'addworker.html')

def send_welcome_email(email, password, worker_name):

    login_url = 'http://127.0.0.1:8000/login/' # Update with your actual login URL
    login_button = f'Click here to log in: {login_url}'

    subject = 'VehiCare Hub - Worker Registration'
    message = f'Hello {worker_name},\n\n'
    message += f'Welcome to VehiCare Hub\n\n'
    message += f'Your registration is complete, and we're excited to have you join us. Here are your login

```



```

credentials:\n\n"
    message += f"Email: {email}\nPassword: {password}\n\n"
    message += "Please take a moment to log in to your account using the provided credentials. Once you've
logged in, we encourage you to reset your password to something more secure and memorable.\n\n"
    message += login_button
    message += "\n\nSoulCure is committed to providing a safe and supportive environment for both
therapists and clients. Together, we can make a positive impact on the lives of those seeking healing and
guidance.\n"
    message += "Thank you for joining the VehiCare Hub community. We look forward to your
contributions and the positive energy you'll bring to our platform.\n\n"
    message += "Warm regards,\nThe VehiCare Hub Team\n\n"

    from_email='jessojoseph2024@mca.ajce.in'
    # Replace with your actual email
    recipient_list = [email]

    send_mail(subject, message, from_email, recipient_list)

```

## 7. assign\_tasks.py

```

def assign_task(request):
    if request.method == 'POST':
        worker_id = request.POST.get('worker_id')
        appointment_id = request.POST.get('appointment_id')

        if worker_id and appointment_id:
            try:
                worker = Worker.objects.get(id=worker_id)
                appointment = Appointment.objects.get(id=appointment_id)

                if worker.is_available:
                    task = Task.objects.create(
                        title=f"Task for {appointment.user_name.username}",
                        description=f"Assignment for appointment on {appointment.service_date} at
{appointment.service_time}",
                        worker=worker,
                        appointment=appointment, # Assign the selected appointment to the task
                        status='pending', # Set the initial status as pending or as needed
                        deadline=appointment.service_date, # Set the deadline based on the appointment date
                    )
                    worker.is_available = False
                    worker.save()
                    appointment.appointment_status = 'Assigned'
                    appointment.save()

                    return redirect('viewappointments')
            else:
                pass # Add your code here

        except Worker.DoesNotExist:
            # Handle the case when no matching worker is found
            pass # Add your code here

        except Appointment.DoesNotExist:
            # Handle the case when no matching appointment is found
            pass # Add your code here

```

---

```
workers = Worker.objects.filter(is_available=True) # Fetch available workers
appointments = Appointment.objects.filter(appointment_status='Scheduled') # Fetch scheduled appointments
return render(request, 'assign_task.html', {'workers': workers, 'appointments': appointments})
```

## 8. update\_works.py

```
def update_work_status(request, task_id):
    task = get_object_or_404(Task, id=task_id)

    if request.method == 'POST':
        new_status = request.POST.get('new_status')
        work_done = request.POST.get('work_done')
        materials_used = request.POST.get('materials_used')
        additional_notes = request.POST.get('additional_notes')
        audio_data = request.FILES.get('audio_data')

        task.status = new_status
        task.work_done = work_done
        task.materials_used = materials_used
        task.additional_notes = additional_notes

        if audio_data:
            task.audio_file.save(audio_data.name, audio_data)

        task.save()

        if new_status == 'completed':
            # Get the worker associated with the task
            worker = task.worker

            # Mark the worker as available for other jobs
            worker.is_available = True
            worker.save()

            # Update the appointment status associated with this task
            appointment = task.appointment
            appointment.appointment_status = 'Completed'
            appointment.save()
            return redirect('workerdashboard')
    return render(request, 'worker/update_work_status.html', {'task': task})
```

## 9. payment.py

```
def payment(request, appointment_id):
    current_appointment = get_object_or_404(Appointment, pk=appointment_id)

    currency = 'INR'
    amount = 150 # Get the subscription price
    amount_in_paise = int(amount * 100) # Convert to paise
    razorpay_order = razorpay_client.order.create(dict(
        amount=amount_in_paise,
        currency=currency,
        payment_capture='0'
    ))
```

```

razorpay_order_id = razorpay_order['id']
callback_url = reverse('paymenthandler', args=[appointment_id]) # Define your callback URL here
payment = Payment.objects.create(
    user=request.user,
    razorpay_order_id=razorpay_order_id,
    payment_id="", # You can update this later
    amount=amount,
    currency=currency,
    payment_status=Payment.PaymentStatusChoices.PENDING,
    appointment=current_appointment
)
payment.save()

context = {
    'user': request.user,
    'appointment': current_appointment,
    'razorpay_order_id': razorpay_order_id,
    'razorpay_merchant_key': settings.RAZOR_KEY_ID,
    'razorpay_amount': amount_in_paise,
    'currency': currency,
    'amount': amount_in_paise / 100,
    'callback_url': callback_url,
}

return render(request, 'pay.html', context)

@csrf_exempt
def paymenthandler(request, appointment_id):
    if request.method == "POST":
        payment_id = request.POST.get('razorpay_payment_id', "")
        razorpay_order_id = request.POST.get('razorpay_order_id', "")
        signature = request.POST.get('razorpay_signature', "")
        result = razorpay_client.utility.verify_payment_signature({
            'razorpay_order_id': razorpay_order_id,
            'razorpay_payment_id': payment_id,
            'razorpay_signature': signature
        })

        payment = Payment.objects.get(razorpay_order_id=razorpay_order_id)
        amount = int(payment.amount * 100) # Convert Decimal to paise
        razorpay_client.payment.capture(payment_id, amount)

        payment.payment_id = payment_id
        payment.payment_status = Payment.PaymentStatusChoices.SUCCESSFUL
        payment.save()

        update_appointment = Appointment.objects.get(id=appointment_id)
        update_appointment.appointment_status = 'Scheduled' # Update the status field
        update_appointment.save()

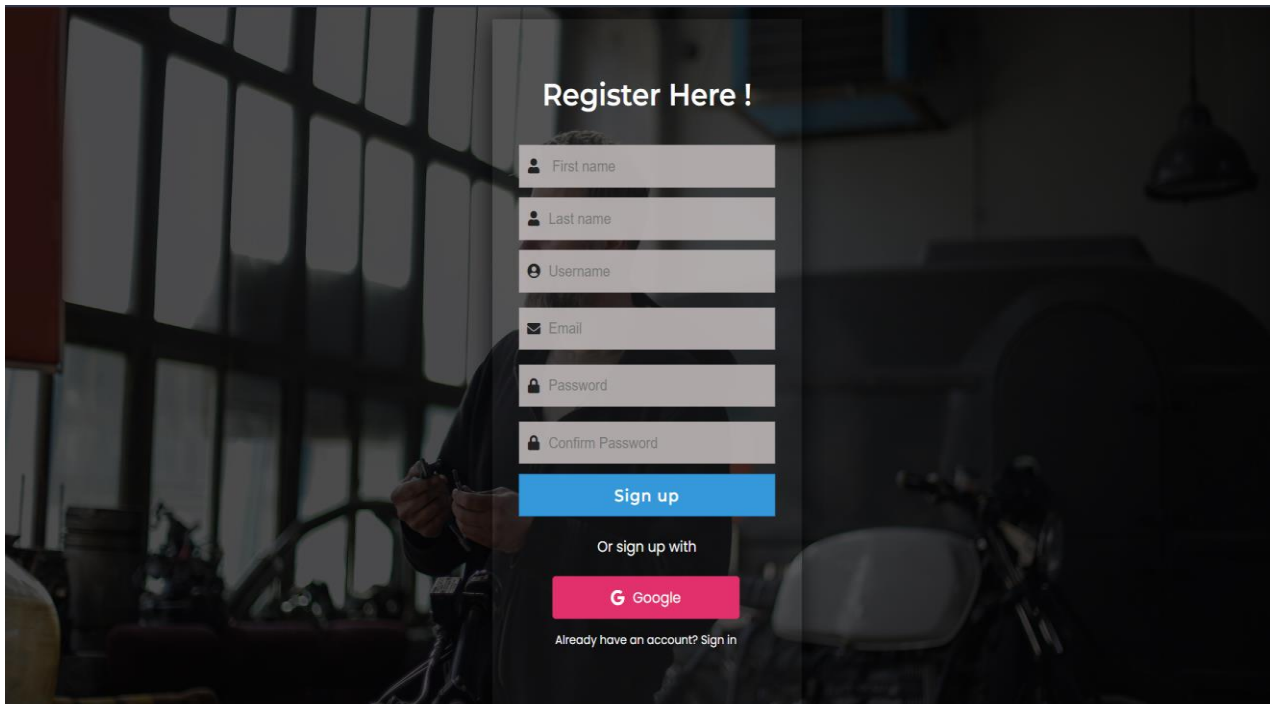
        return render(request, 'confirmation.html', {'appointment': update_appointment})

    return HttpResponseBadRequest()

```

## 9.2 SCREEN SHOTS

### Signup Page



The screenshot shows the 'Register Here !' section of the VehiCare Hub website. It features a dark background with a semi-transparent white form overlay. The form includes input fields for 'First name', 'Last name', 'Username', 'Email', 'Password', and 'Confirm Password'. Below these fields is a blue 'Sign up' button. Underneath the button, there is a link 'Or sign up with' followed by a pink 'Google' button. At the bottom, a link 'Already have an account? Sign in' is displayed.

**Register Here !**

First name

Last name

Username

Email

Password

Confirm Password

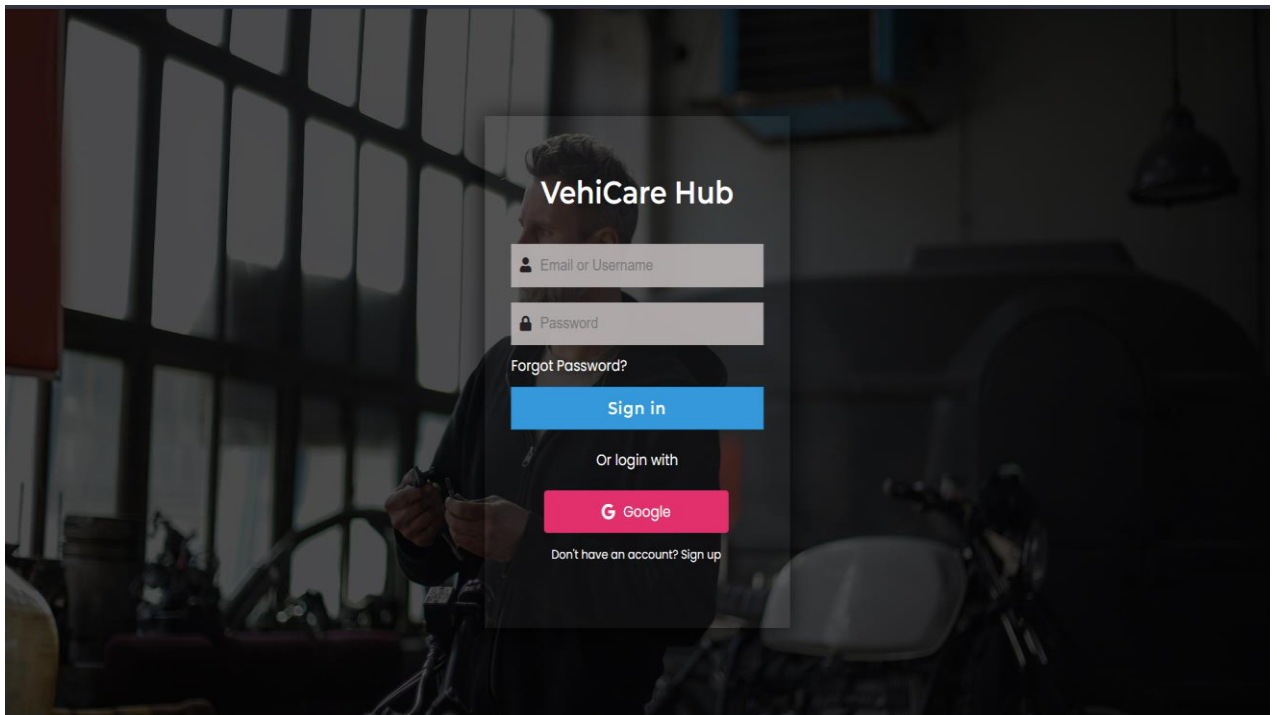
**Sign up**

Or sign up with

**Google**

Already have an account? Sign in

### Login Page



The screenshot shows the 'VehiCare Hub' login section of the website. It features a dark background with a semi-transparent white form overlay. The form includes input fields for 'Email or Username' and 'Password'. Below these fields is a blue 'Sign in' button. Underneath the button, there is a link 'Or login with' followed by a pink 'Google' button. At the bottom, a link 'Don't have an account? Sign up' is displayed.

**VehiCare Hub**

Email or Username

Password

Forgot Password?

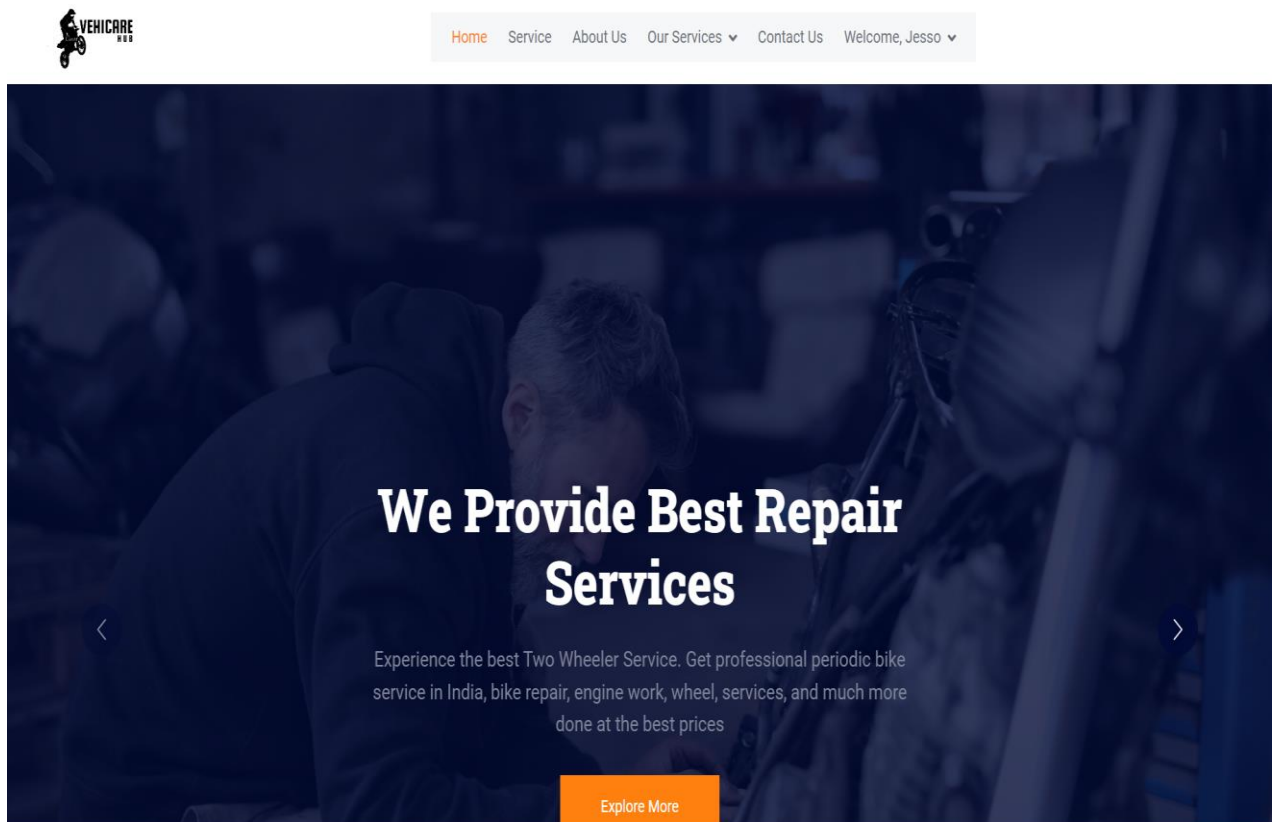
**Sign in**

Or login with

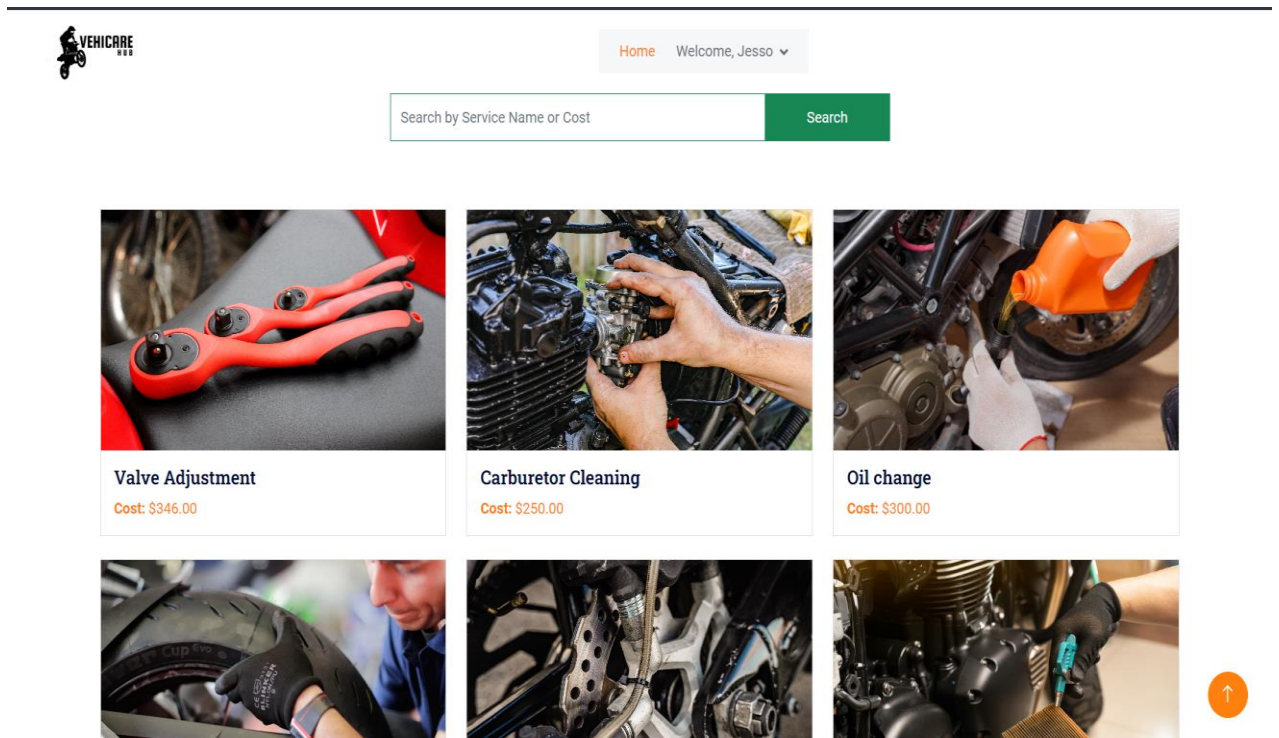
**Google**

Don't have an account? Sign up


## Index Page



## View\_services Page



## Appointment Page



[Home](#) Welcome, Jesso ▾

[f](#) [t](#) [in](#) [@](#)


## Book an Appointment

User Name:

Vehicle Model:

Build Year:

Registration Number:

Service Date:  
 

Service Type:

[Book Appointment](#)


## VehiCar Hub

### Newsletter

Clita erat ipsum et lorem et sit, sed stet lorem sit clita.

[↑](#)

## View\_appointments Page



[Home](#) Welcome, Jesso ▾

[f](#) [t](#) [in](#) [@](#)

## View Appointments

User	Date	Status	Action
Jesso	Oct. 12, 2023	Scheduled	<a href="#">Cancel Appointment</a>

[Back to Home](#)

## VehiCar Hub

Diam dolor diam ipsum sit. Aliqu diam amet diam et eos. Clita erat ipsum et lorem et sit, sed stet lorem sit clita. Diam dolor diam ipsum sit. Aliqu diam amet diam et eos. Clita erat ipsum et lorem et sit.

### Newsletter

Clita erat ipsum et lorem et sit, sed stet lorem sit clita.

[SignUp](#)

### Get In Touch

 123 Street, New York, USA

 +012 345 67890

 vehicare@gmail.com

### Our Services

- > Installations
- > Engine Services
- > Water Services

### Quick Links

- > About Us
- > Contact Us
- > Our Services

### Follow Us

[t](#) [f](#) [v](#) [in](#)

[↑](#)

## Add service Page

[Home](#) [Welcome, admin](#) ▼

### Create a New Service

Service Name:

Service Description:

Service Cost:

Service Image:

[Choose File](#) No file chosen[Create](#)**VehiCar Hub**[Newsletter](#)

## Add worker Page

[Home](#) [Welcome, admin](#) ▼

### Add Worker

Username

Email

Password

[Register](#)**VehiCar Hub**[Newsletter](#)

Diam dolor diam ipsum sit. Aliqu diam amet diam et eos. Clita erat ipsum et lorem et sit, sed stet lorem sit clita.

Clita erat ipsum et lorem et sit, sed stet lorem sit clita.



## Work assignment Page

[Home](#) Welcome, admin ▾

### Assign Task

Select Worker:

-- Select Worker --

Select Appointment:

-- Select Appointment --

Task Deadline:

mm/dd/yyyy --:-- --

[Assign Task](#)

## VehiCar Hub

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