SEND MECH - Online Service Provider for Vehicles

BY

Syed MD Nazmus Sakib

ID: 201-15-14094

This Project report has been submitted in fulfilment of the requirements for the Degree of Bachelor of Science in Computer Science and Engineering

Supervised by

Ms. Sharmin Akter

Senior Lecturer,

Department of Computer Science and Engineering

Daffodil International University

Co-Supervised by

Ms. Tapasy Rabeya

Senior Lecturer

Department of Computer Science and Engineering

Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

APPROVAL

This Project is titled **"SEND MECH - Online Service Provider for Vehicles"**, submitted by **Syed MD Nazmus Sakib** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 14/07/24

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Faculty of Science & Information Technology
Daffodil International University

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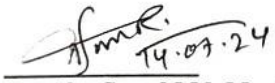
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Md. Aynul Hasan Nahid — **Internal Examiner 2**
Lecturer
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

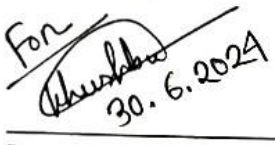


Dr. Abu Sayed Md. Mostafizur Rahaman — **External Examiner**
Professor
Department of CSE
Jahangirnagar University

DECLARATION

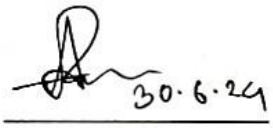
We hereby declare that this project has been done by us under the supervision of **Ms. Sharmin Akter, Senior Lecturer**, Department of CSE **Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

Supervised by:



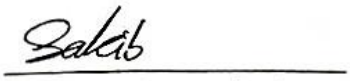
Ms. Sharmin Akter
Senior Lecturer
Department of CSE
Daffodil International University

Co-Supervised by:



Ms. Tapasy Rabeya
Senior Lecturer
Department of CSE
Daffodil International University

Submitted by:



Syed MD Nazmus Sakib
ID: 201-15-14094
Department of CSE

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ABSTRACT

The Services Sharing Platform is an innovative online tool created to promote a thriving culinary community where people can effortlessly share their beloved specialties. Services lovers and amateur cooks are continuously looking for inspiration and connections via the joy of cooking and sharing in today's connected world. This website offers users a simple interface via which they may upload, arrange, and display their original culinary creations. Users have access to a wide variety of services, ranging from classic family favorites to cutting-edge culinary experimentation, making it a useful tool for both seasoned chefs and inexperienced cooks.

A thorough services database, engaging forums, and the option to follow favorite chefs for tailored service recommendations are some of the key elements of the Services Sharing Platform. This platform promotes the sharing of culinary expertise and the appreciation of service culture from all over the world with an emphasis on user participation and interaction.

A delectable voyage of discovery, creativity, and connection awaits you when you join our culinary community and use the Services Sharing Platform.

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CHAPTER 1
INTRODUCTION

1.1 Introduction

The occurrence of unexpected mechanical issues can disrupt the flow of life in the dynamic realm of modern living, where our reliance on motor vehicles is integral to daily routines. Enter "SEND MECH," a game-changing online platform designed to reimagine and streamline the entire mechanical assistance experience. In this interconnected world, where time is of the essence, our platform stands out as a beacon of convenience and efficiency, reshaping how users interact with and resolve vehicular challenges. At the heart of "SEND MECH" is a determination to change the narrative surrounding vehicle breakdowns. These difficulties are no longer a source of frustration, but rather opportunities for quick resolution and hassle-free assistance. With a user-centric approach, our platform enables individuals experiencing vehicle problems to initiate immediate assistance with a few taps on their devices.

"SEND MECH" goes beyond the typical boundaries of mechanical service requests. It embodies a vision in which technology acts as a link between users in need and capable service providers, resulting in a real-time, community-driven ecosystem for emergency vehicle assistance. This introduction serves as an invitation to investigate the essence of our project—how it seamlessly integrates the power of technology with users' urgent needs and service providers' expertise. As we embark on this journey, imagine a future in which mechanical breakdowns are met with confidence, users can quickly connect with nearby service providers, and "SEND MECH" becomes synonymous with dependable, efficient, and community-centric vehicular assistance.

1.2 Motivation

Every motivation, and "SEND MECH" is no exception, has a backstory. Our platform was inspired by the recognition of the often cumbersome, time-consuming, and stressful process that users go through when their vehicles experience mechanical problems. The traditional model of finding a dependable service provider, scheduling appointments, and waiting for assistance can be a daunting task at times.

The goal of "SEND MECH" is to simplify and elevate this experience. The motivation stems from a desire to provide users with a seamless and instantaneous solution to their vehicular challenges. We envision a world in which the anxiety caused by a breakdown is quickly replaced by the assurance of prompt and dependable assistance. Our motivation is to improve the entire process, not just the vehicles. "SEND MECH" is motivated by the belief that gaining access to mechanical services should be as simple as pressing a few buttons on a device. This

drive fuels our determination to change the narrative surrounding vehicle breakdowns, transforming them into moments of convenience, transparency, and reassurance.

As we investigate the motivations behind "SEND MECH," we invite you to join us on a journey where the challenges of vehicular breakdowns are met with innovative solutions, and where the user experience is at the forefront of our commitment to redefining emergency vehicle assistance.

1.3 Objectives

"SEND MECH" is guided by a set of broad goals that address the various needs of its key stakeholders—the user, the service provider, and the administrator. These goals serve as the foundation for the platform's functionalities and benefits, ensuring a holistic and user-centric approach.
The primary goals of "SEND MECH" are defined to address the specific needs of each stakeholder group:

For Users:

1. Seamless Booking: Create a user-friendly platform that allows for the quick booking of mechanical services, ensuring a hassle-free experience for users who require immediate assistance.
2. Product Purchase: Allow users to easily purchase required vehicle products from within the platform, creating a one-stop solution for both services and products.
3. Real-Time Location Tracking: Implement real-time location tracking to provide transparency throughout the service process, giving users visibility into the status of their service requests.

Providers of Services:

1. Efficient Registration: Make the registration process for service providers simple and efficient, ensuring a smooth onboarding experience.
2. Service Showcasing: Allow service providers to showcase their product and service offerings, increasing visibility and attracting a larger user base.
3. Streamlined Service Requests: Improve overall service delivery by streamlining the process of accepting and managing service requests from users.

For the Administrator:

1. User Profile Management: Provide tools to the administrator for efficiently managing user profiles while ensuring accurate and up-to-date information.
2. Oversight of Service Providers: Allow for seamless oversight of service provider profiles, fostering a well-regulated and trustworthy service provider community.

3. Resolution of Customer Complaints: Provide a centralized system for customer complaint resolution, ensuring prompt and effective responses to improve user satisfaction.

These objectives work together to achieve the overarching goal of "SEND MECH": to create a harmonious ecosystem in which users can access timely and dependable mechanical services, service providers can expand their reach, and the administrator can ensure the platform's smooth operation.

1.4 Expected Outcome

The "SEND MECH" project envisions a paradigm shift in the landscape of emergency vehicle assistance, with users, service providers, and the broader community anticipating a slew of transformative outcomes. For users, the platform promises a revolution in the response to vehicular challenges, ensuring quick and efficient assistance that reduces downtime and the inconveniences associated with breakdowns. Aside from immediate assistance, users will enjoy an improved journey thanks to the seamless integration of convenient access to essential vehicle products and real-time location tracking. This combination not only simplifies the service request process but also provides users with unprecedented transparency, allowing them to monitor and make informed decisions about their ongoing assistance.

"SEND MECH" aims to increase visibility and foster business growth for service providers by providing a dedicated platform for showcasing services and products. The streamlined service request management process is expected to increase efficiency, resulting in increased customer satisfaction and repeat business. In turn, the administrator gains effective oversight capabilities, ensuring the platform's dependability and credibility. The centralized system for handling customer complaints demonstrates the company's dedication to user satisfaction, fostering a positive and trustworthy community environment.

The "SEND MECH" initiative, which represents a community-driven approach to mechanical assistance, has the potential to benefit the entire community. The platform not only serves as a practical solution to vehicular challenges by forming a collaborative network between users and service providers, but it also contributes to the formation of a cohesive community centered on mutual support. "SEND MECH" aspires to set new industry standards as a technological advancement in the realm of emergency vehicle assistance, becoming a cornerstone for users seeking immediate assistance, service providers expanding their clientele, and the community embracing a culture of technological innovation.

"SEND MECH" not only addresses immediate mechanical needs but also aims to redefine the entire experience of emergency vehicle assistance, providing a futuristic and user-centric experience.

1.5 Project management and finance

The successful execution of "SEND MECH" is dependent on strong project management and financial strategies that ensure the platform's seamless development, deployment, and long-term operation. This section delves into the fundamentals of project management and finance, laying out the methodologies and considerations used to steer the project toward its objectives.
Effective project management is the foundation of "SEND MECH," ensuring that the development and deployment processes are in line with the project's overall goals. The project management approach employs agile methodologies and iterative development cycles, allowing for flexibility and adaptability to changing requirements. Regular milestone assessments and release plans are essential components for facilitating the systematic rollout of features and adhering to project timelines.

Financial considerations are critical to the long-term viability and success of "SEND MECH." A detailed budget forecast outlines the anticipated costs of development, marketing, and ongoing maintenance. Financial support mechanisms are put in place to secure the necessary resources, while partnerships and collaborations are fostered to strengthen the platform's foundation. Cost-cutting measures are put in place to ensure that resources are used efficiently and effectively.
The income generation model of "SEND MECH" has been carefully crafted, incorporating revenue streams such as service fees, featured listings for service providers, and strategic partnerships. Return on Investment (ROI) analyses are performed to determine the financial viability of a project and to align the financial strategy with the desired outcomes. To maintain transparency and accountability in financial operations, robust accounting reporting mechanisms are established.
Emergency planning is an essential component of the project's financial strategy, anticipating unforeseen challenges and ensuring the project's resilience in the face of unforeseen events. Long-term financial plans and strategies have been devised to support the continuous evolution and growth of "SEND MECH."
In essence, the project management and finance section emphasizes the company's commitment to a well-planned development process and financial strategy, laying the groundwork for "SEND MECH" to thrive in the ever-changing landscape of emergency vehicle assistance.

1.6 Goals

The objectives of "SEND MECH" are inextricably linked to its overarching mission: to redefine emergency vehicle assistance and build a user-centric platform that seamlessly connects users with dependable service providers. This section articulates the specific goals that guide the platform's development and operation, influencing its impact on users, service providers, and the community.

The objectives of "SEND MECH" encompass a multifaceted vision, which includes:

The primary goal is to provide a user-centric experience, ensuring that users can access mechanical services quickly and efficiently, minimizing disruptions caused by vehicle breakdowns. This entails developing a user-friendly platform that streamlines the process of requesting assistance and purchasing necessary products.

- ✓ Empowering Service Providers: "SEND MECH" aims to empower service providers by providing a platform that improves their visibility, streamlines service management, and enables business growth. The goal is to foster an environment in which service providers can thrive while meeting the diverse needs of users.

- ✓ Administrator Efficiency: A key goal is to ensure the administrator's efficiency in managing user profiles, supervising service providers, and responding to customer complaints. This includes supplying the necessary tools and systems to streamline administrative tasks and promote a well-regulated platform.

- ✓ Community Collaboration: "SEND MECH" aspires to foster community collaboration by establishing a network in which users and service providers collaborate for mutual benefit. The goal is to create a supportive ecosystem by establishing a community-driven approach to mechanical assistance.

- ✓ Technological Innovation: Contributing to technological innovation in the field of emergency vehicle assistance is a critical goal. This entails staying ahead of technological advancements, constantly improving the platform, and setting new efficiency and user experience standards.

- ✓ Financial Sustainability: "SEND MECH" strives for financial sustainability by implementing strong financial strategies such as budget forecasting, income generation models, and emergency planning. The goal is to ensure the project's resilience and long-term viability in a changing environment.

These objectives represent the guiding principles that propel "SEND MECH" forward, shaping its development, operation, and impact on the community. They act as a guidepost, directing efforts toward the development of a platform that not only meets immediate needs but also

contributes to a positive and transformative experience for users, service providers, and the community.

1.7 Project Schedule

Given the time constraints, I must make a timetable to finish the job on time. It also means expressing how urgent the work in question is.

1.7.1 Release Plan and Milestone

The release plan and milestones are given below:

Activities	Duration in week Total week
Research	W1, W2
Specifications	W2, W3, W4
Planning	W3, W4 2
Design	W4, W5 2
Development	W4, W5, W6, W7
Testing Assessment	W7, W8 W9
Documentation	W10, W11, W12
Software release	W12

Table 1.1: Release Plan

CHAPTER 2
BACKGROUND

2.1 Related work

A diverse array of platforms has emerged in navigating the vast field of emergency vehicle assistance, each contributing to the ongoing evolution of services catering to vehicular challenges. One notable example is [mention a specific platform or category, a pioneer in the field of specifying the focus, for example, on-demand vehicle assistance. This platform has carved a niche for itself by exemplifying efficiency and dependability in providing quick solutions to users in times of vehicular distress. Furthermore, [mention another platform has piqued the industry's interest with its mention of distinguishing features, introducing novel approaches that have left an indelible mark on the landscape.
"SEND MECH" gains valuable insights into the dynamics that define user expectations and service provider capabilities by delving into the complexities of these platforms. Success stories from related platforms serve as beacons, illuminating the path to innovative solutions, while their failures provide lessons to fortify "SEND MECH" against potential pitfalls. This investigation is more than just a survey of existing work; it is a strategic reconnaissance that will equip "SEND MECH" with the knowledge needed to outperform industry standards and usher in a new era of excellence in emergency vehicle assistance.

2.2 Scope

The scope of "SEND MECH" must be defined to lay the groundwork for its development, deployment, and subsequent operation. This section explains the platform's specific functionalities, defines the target audience, and describes its geographical coverage, providing a comprehensive understanding of its intended reach and impact.

- **Functionalities:** "SEND MECH" encompasses a diverse set of features designed to simplify the landscape of emergency vehicle assistance. The platform will facilitate [mention key user functionalities, allowing them to quickly access mechanical services with unparalleled ease. Concurrently, service providers will benefit from [mention key service provider functionalities, such as increased visibility, streamlined service management, and opportunities for business growth.

- **The primary target:** the audience for "SEND MECH" is defined as the primary target audience, individual vehicle owners, businesses, etc. "SEND MECH" aspires to become an indispensable resource for those in need of immediate and dependable vehicular assistance by tailoring the platform to meet the specific needs of this demographic.

- **Geographical Coverage:** "SEND MECH" will initially focus on [specify the initial coverage area, e.g., specific cities or regions]. This focused approach enables targeted

development and community involvement. The platform, on the other hand, is designed for scalability, and subsequent phases will see strategic expansions to potential expansion areas and beyond.

"SEND MECH" aims to create a platform that not only meets the immediate needs of its users and service providers but also lays the groundwork for future growth and adaptability by clearly defining the scope. The definition of functionalities, target audiences, and geographical coverage serves as a road map, guiding the project toward impactful and long-term results.

2.3 Challenges:

The ability to anticipate and effectively address challenges is critical to the success and resilience of "SEND MECH." This section identifies potential roadblocks and suggests strategic approaches to overcoming them, ensuring a proactive and adaptive approach throughout the development and operational phases.

"SEND MECH" anticipates several potential challenges in the ever-changing landscape of emergency vehicle assistance. These difficulties include potential difficulties, such as user adoption, service provider engagement, and technological hurdles. To address these challenges proactively, the project has developed strategic approaches, such as highlighting specific strategies or contingency plans.

- **User Adoption:** Successful user adoption of "SEND MECH" may face challenges related to awareness and a shift away from traditional modes of seeking assistance. To address this, targeted marketing campaigns, user education initiatives, and early adopter incentives are being planned.

- **Engagement of Service Providers:** Ensuring active engagement from service providers is critical to the platform's success. Potential challenges in this area include such as onboarding difficulties and aversion to adopting new technology. To address these issues, strategies include providing comprehensive onboarding support, highlighting the benefits of platform participation, and cultivating a sense of community among service providers.

- **Technological Difficulties**: The incorporation of advanced technology may present difficulties during the development and deployment phases. Thorough testing protocols, collaboration with technology experts, and continuous updates to adapt to evolving technological landscapes are examples of strategies.

"SEND MECH" aims to navigate the complexities of emergency vehicle assistance with resilience and effectiveness by acknowledging these challenges and proactively planning for their resolution. This section demonstrates the project's dedication to adaptability and continuous improvement, ensuring that challenges are transformed into opportunities.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Business Process Modelling (BPM)

A helpful method for visualizing and recording the operations and activities within a company or application is business process modeling (BPM). You may use BPM to identify the main procedures in a "Service-providing platform" online application for exchanging custom services. The BPM for such a platform is as follows:

Providing service on a "SEND MECH" is the process.

Authentication of Users and User Registration

- Users log in and register on the platform.
    - Sub-processes:
        - User Authentication
        - User Sign-Up

Management of profiles:

- Users can create, edit, and manage their profiles.
    - Sub-processes:
        - Make a Profile
        - Change Profile
        - Eliminate Profile

Service Development:

- Users can create and upload their services.
    - Sub-processes:
        - Make an Item
        - Product Editing
        - Discard Product
        - Searching for and Finding a mechanic’s shop

- Users can find services.
    - Sub-processes:
        - Keyword Lookup
        - Using Categories to Search
        - Viewing and interacting with mechanical experts.

- Users may read service descriptions and save them.
    - Sub-processes:

        - Watch services
        - Save services
        - Social Dialogue

- Users may create networks, follow other users, and get updates.
    - Sub-processes:
        - Observe User
        - User unfollowed
        - Notifications

Service Exchange:

- Users can post services on other social media sites.
    - Sub-processes:
        - Post to social media
        - Send to Email

Administration:

- Users can edit what they've shared.
    - Sub-processes:
        - Edit a service
        - Substitute taken services
        - Updated product information

Management and Control:

- Administrators can control users, material
    - Sub-processes:
        - Content Control
        - User Administration
        - Resolution of Conflict

Reporting and Analytics:

- Producing reports and analyzing users.
    - Sub-processes:
        - Data Gathering
        - Analysis of Data
        - Create Reports

Data privacy and security:

- Ensuring the safety of the platform and adherence to data privacy laws.
    - Sub-processes:
        - Protection of User Data
        - Audits of security
        - Compliance Examines
        - Updating and maintaining the platform

- Maintenance, bug repairs, and feature upgrades are ongoing activities.
    - Sub-processes:
        - Fixing bugs
        - Feature Creation
        - Maintenance of servers

The main operations of a web application for the send mech platform are high-level summarised in this BPM. These procedures can each be described in more depth with particular actions and judgment calls. To provide a seamless and interesting user experience on the platform, it's also critical to take into account the user experience and interaction flow inside each procedure.

3.2 Development model:

Choosing a solid development model is a critical decision that will shape the path of "SEND MECH" from conception to deployment. This section delves into the reasons for selecting the Agile development model, emphasizing its significant implications for the project's evolution.

User Sign-Up and Profiles:

- Add login and user registration capabilities.
- Permit users to make profiles.
- Enable the bio descriptions and profile photographs.

Inquiry and Discovery

- Create a robust search engine that enables users to locate services using keywords, and product names.
- Make a section that features trendy accessories.
- Include a method for recommending customized modification ideas.

Social Qualities

- Users should be able to follow other users and view most services.
- Ensure that users may store their preferred services.

Community Engagement:

- Create a forum or message board where people may post queries and culinary advice.
- Mobile Adaptivity
- Make sure the platform is usable on a range of gadgets, such as smartphones and tablets.

Privacy and security

- Put data protection safeguards for users in place.
- Verify and control material to stop services that are unsuitable or hazardous.
- Reporting and Reaction
- User may report problems or make suggestions.
- keep an eye on the platform and change it as needed depending on user input.

Scalability and Effectiveness

- Plan the platform's scalability with a rising user base in mind.
- To guarantee quick loading times and responsiveness, and optimize performance.

Quality Control

- Do extensive testing to find and repair issues.
- Conduct security audits to safeguard user information.

Promotion and Marketing

- Create a smart launch campaign to draw in new users.
- Make use of influencers, social media, and bloggers for promotion.

Continual Development

- Update the platform often with new features and improvements depending on consumer demand and market developments.

In conclusion, the development approach for the SEND MECH Platform sets the groundwork for producing an interesting and user-focused online service. The website wants to become the go-to location for sharing and finding distinctive services by emphasizing user experience, security, and community participation.

3.2.1 Functional Requirements

- Functional Requirements for a Platform for Service Delivery.

Authentication and User Registration

- Users must be able to register using their email addresses or social media accounts.

Profile Control

- The ability for users to establish and manage their profiles, including the addition of a profile photo and personal data, is essential.

Creating and Editing Items

- Service providers ought to be able to create new services by including information like the title, the equipment, the procedures, and the taken time.
- Existing services should also be supported for editing and upgrading.

Categorization of Items

- Services have to be divided into different service groups.

Inquiry and Discovery

- The ability for users to search for services using keywords, ingredients, or categories is required.
- Based on user preferences and surfing history, a recommendation system needs to offer suggestions.

Comments and Dialogue

- Users ought to be able to debate topics with other users and provide comments on services.
- Implementing moderation tools to control improper content is a good idea.

Social Networking

- On social media networks, users should have the ability to contribute services.
- A benefit is integration with well-known social networks for simple sharing.

Notifications to Users

- Users ought to be informed of actions involving their services, comments, and followers.

Security Settings

- Users ought to be able to choose whether to make their services public or private by controlling the privacy settings for their vehicles.
- It should be possible to control follower requests and follow other users.
- Users should have the option to bookmark their preferred services for easy access.

Admin Dashboard

- A user's activity feed, together with updates from persons they have followed and suggested services, should be visible on a person's dashboard.

Services Expert

- The ability to export services in various forms, such as PDF or printer-friendly copies, should be available to users.

Monitoring and Control

- Create a procedure for reporting offensive content or conduct.
- There should be admin tools for controlling user-generated material.

Reaction Mechanism

- Create a feedback system that would enable users to offer recommendations and report problems with the platform.

Mobile Friendliness

- Make that the platform is user-friendly and available on a variety of gadgets, such as smartphones and tablets.

Scalability and performance

- The platform has to have the capacity to handle a sizable quantity of services and a developing user base.

Data Protection and Recovery

- backup user data regularly and offer ways to restore it in case of system outages.

Security and Compliance

- Implement security measures to safeguard user information and guarantee compliance with data privacy laws.

Information and Analytics

- Users should be provided with metrics and insights, such as data on user involvement and the most popular services.
- These functional requirements will serve as the framework for a powerful and user-friendly service delivery platform, boosting user experience and encouraging community interaction.

3.2.2 Non-functional Requirement

- **Performance:** The platform must be snappy, load rapidly, and support many concurrent users without noticeably degrading performance.

- **Security:** To safeguard user data and stop unwanted access, strong security measures should be in place. Data encryption and safe authentication are included.

- **Scalability:** The system must be capable of expanding horizontally to meet the needs of growing user traffic and data storage.

- **User Experience:** A pleasant and effective user experience may be achieved by having an intuitive and user-friendly user interface.

- **Compatibility:** To provide accessibility for a large user base, the platform should be compatible with a range of web browsers and mobile devices.

- **Data Backup and Recovery:** To prevent data loss in the event of system failures or other emergencies, regular data backups and a disaster recovery strategy should be in place.

- **Compliance:** The platform shall abide by pertinent data protection laws and copyright laws, protecting the producers of services' intellectual property.

- **Reliability:** The system should operate continuously with little downtime for repairs or upgrades.

- Hosting infrastructure should be scalable to handle traffic surges and the expansion of users and data.

- **Analytics and Reporting:** To enhance platform performance and user experience, implement analytics tools to measure user interaction, popular services, and user

activity.

- These functional and non-functional criteria offer a thorough foundation for creating a services-sharing platform that assures system performance and user happiness.

3.2.3 Hardware specification:

Processor	2.6 GHz or faster process
RAM	4 GB
Disk space	4 GB of available hard disk

3.2.4 Software specification:

Operation System	Linux (preferable), Windows 10
Frontend	HTML, TailwindCSS, ReactJS
Frontend JavaScript library/framework	React.js
Backend	Node.js, REST API
Backend JavaScript library/framework	Express.js
Code Editor	Visual studio code
Database	MongoDB
Web Browser	Google Chrome
Web Server	Node server
Drawing tools	Draw.io

Figure 3.1: Specifications.

3.3 Use Case Diagram

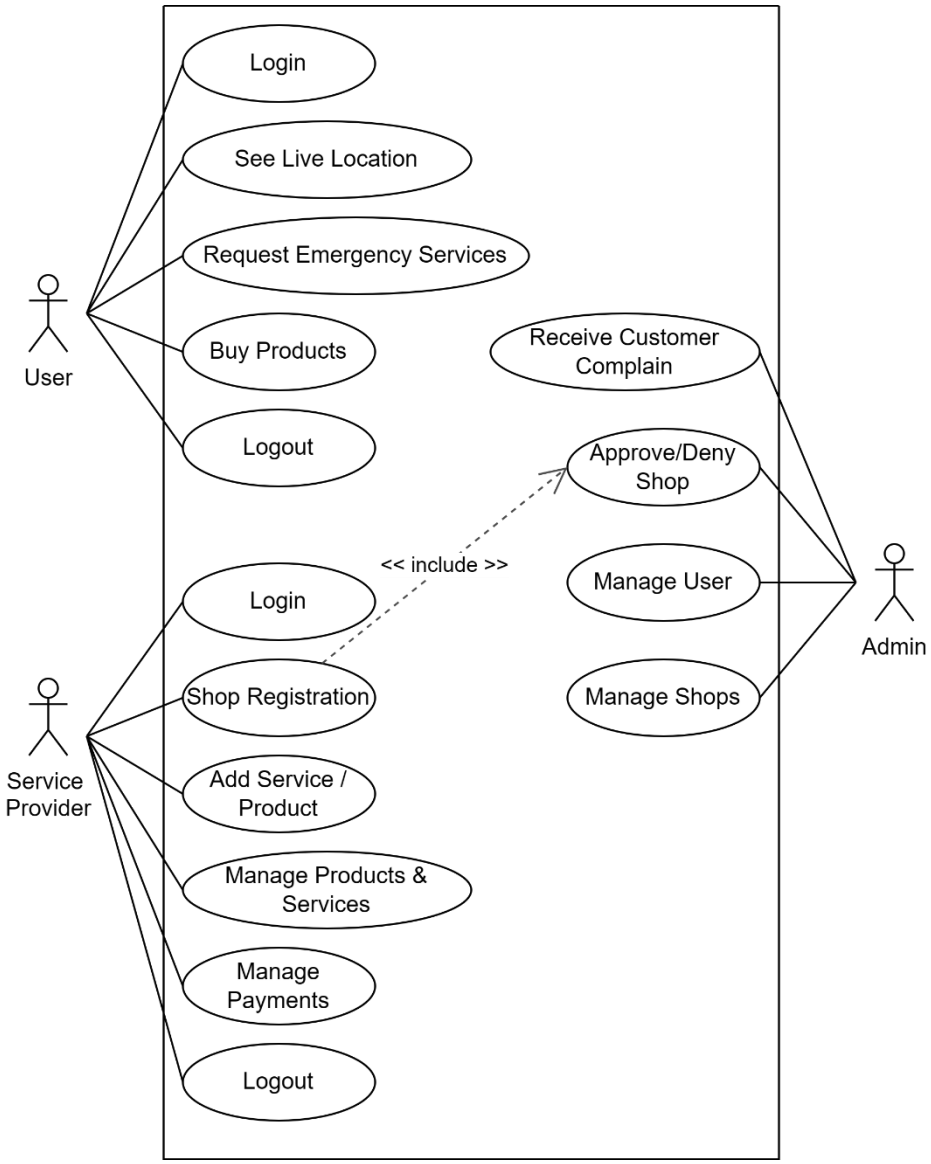


Figure 3.2: Use case diagram.

3.3.1 Use Case Description

Actors:

User: Represents a member of the Services Sharing Platform who has signed up.
Admin: Denotes a moderator or administrator in charge of controlling the platform's users and content.

Use Cases

- Create a new account on the platform by clicking "Register Account."
- Log in: Permits a user to access their account.
- Users can log out of their accounts using the logout feature.
- Services Search: This feature enables users to look for services based on a variety of parameters (such as a keyword, or category).
- View Services Details: This enables a user to see a single service's details.
- Users may add their services to the site using the upload services function.
- Edit Services: Permits a user to change or improve a service that has already been posted.
- Item Delete: This feature enables users to delete one of their posted services from the platform.
- Services Rating: This feature enables users to comment and rate Services.
- remark on Services: Permits users to remark on services.
- Report Services: This feature enables a user to report services for offensive material.
- Manage Profile: This feature enables users to edit their profile details, such as their profile photo and bio.
- Manage Favourites: This feature enables users to edit or add services to their list of favorites.
- To follow or unfollow other people and get updates on their services, go to Manage Subscriptions.
- Administrate Users: This function enables an admin to control user accounts, including the ability to prohibit or suspend users.
- Administrate Services: This feature enables an admin to control the platform's services.

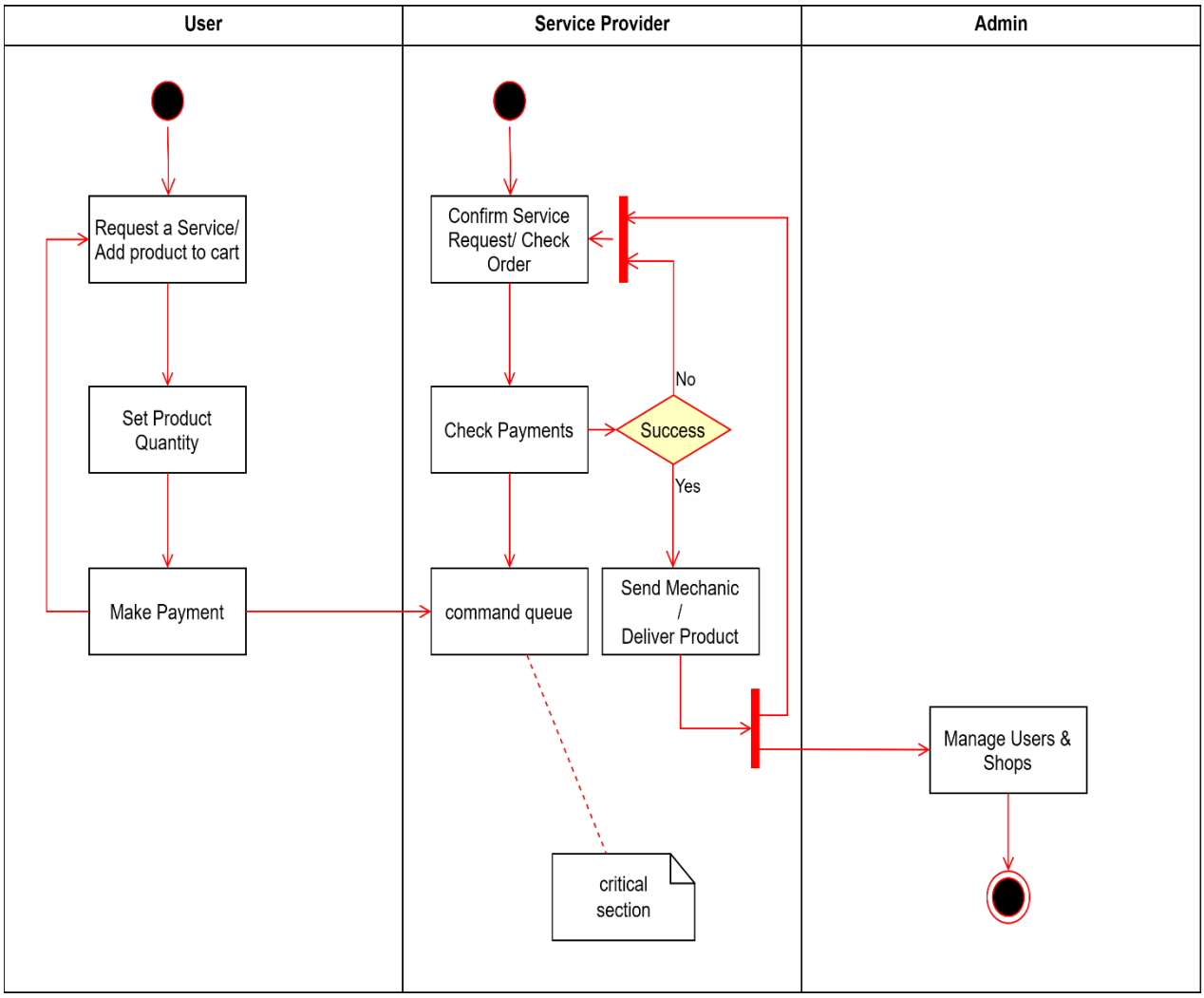
Associations:

- Users may participate in a variety of use cases, such as signing up, looking for services, and managing their accounts.
- For managing users and services, admins have access to use cases that are special to them.

- Services can be uploaded, edited, deleted, rated, commented on, and reported by users.
- Additionally, users may control how they engage with services by adding them to their favorites or subscribing to other users.
- The admin actor is the only one who may utilize the "Administrate Users" and "Administrate Services" use cases.

The interactions between the system and the actors for a services-sharing platform are high-leveled in this use case diagram. It can act as a springboard for the creation and design of more intricate systems.

3.4 Activity Diagram



3.3Activity Diagram

3.5 Sequence Diagram (For Login):

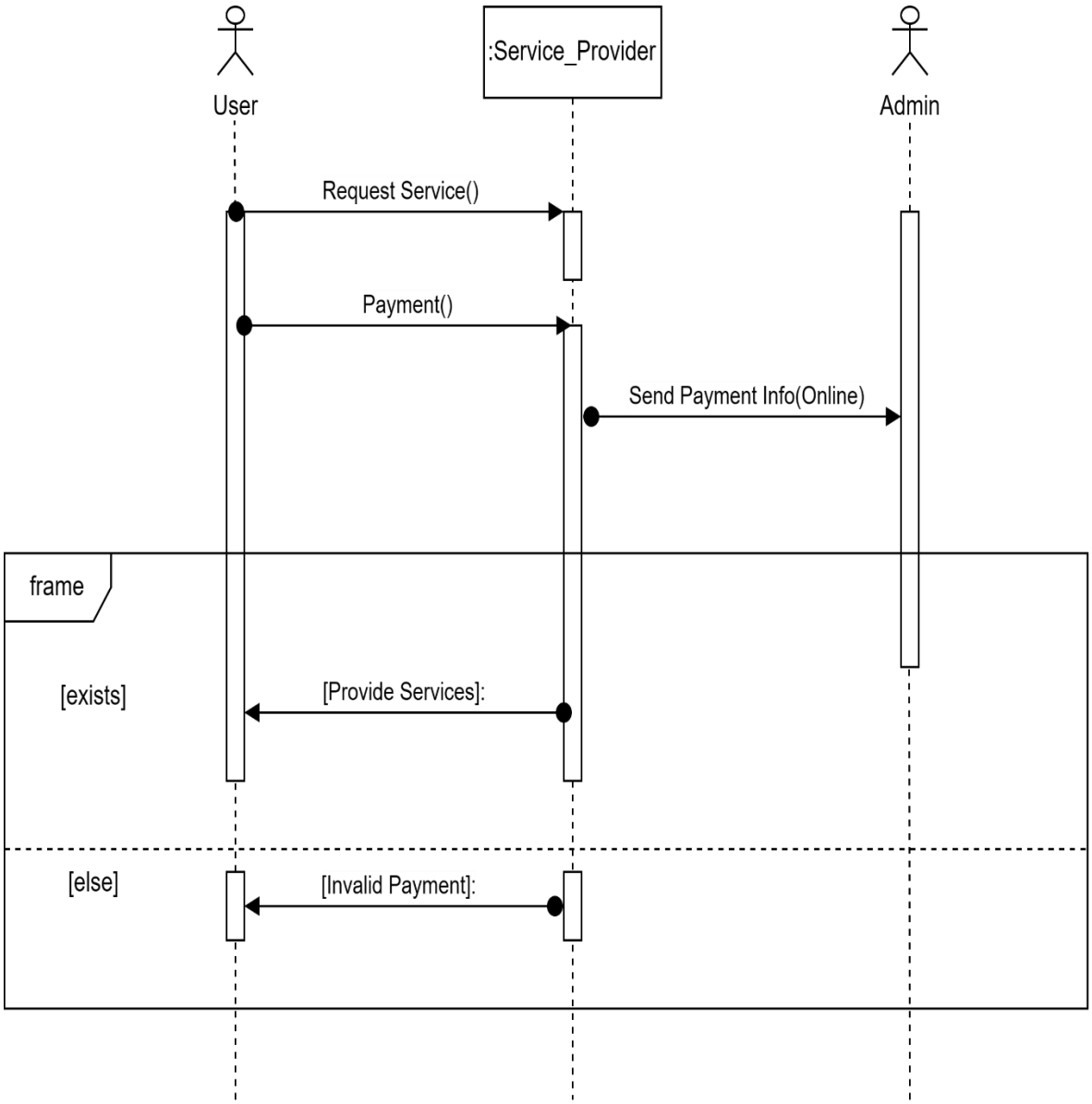


Figure 3.4 Sequence Diagram

3.6 Class Diagram

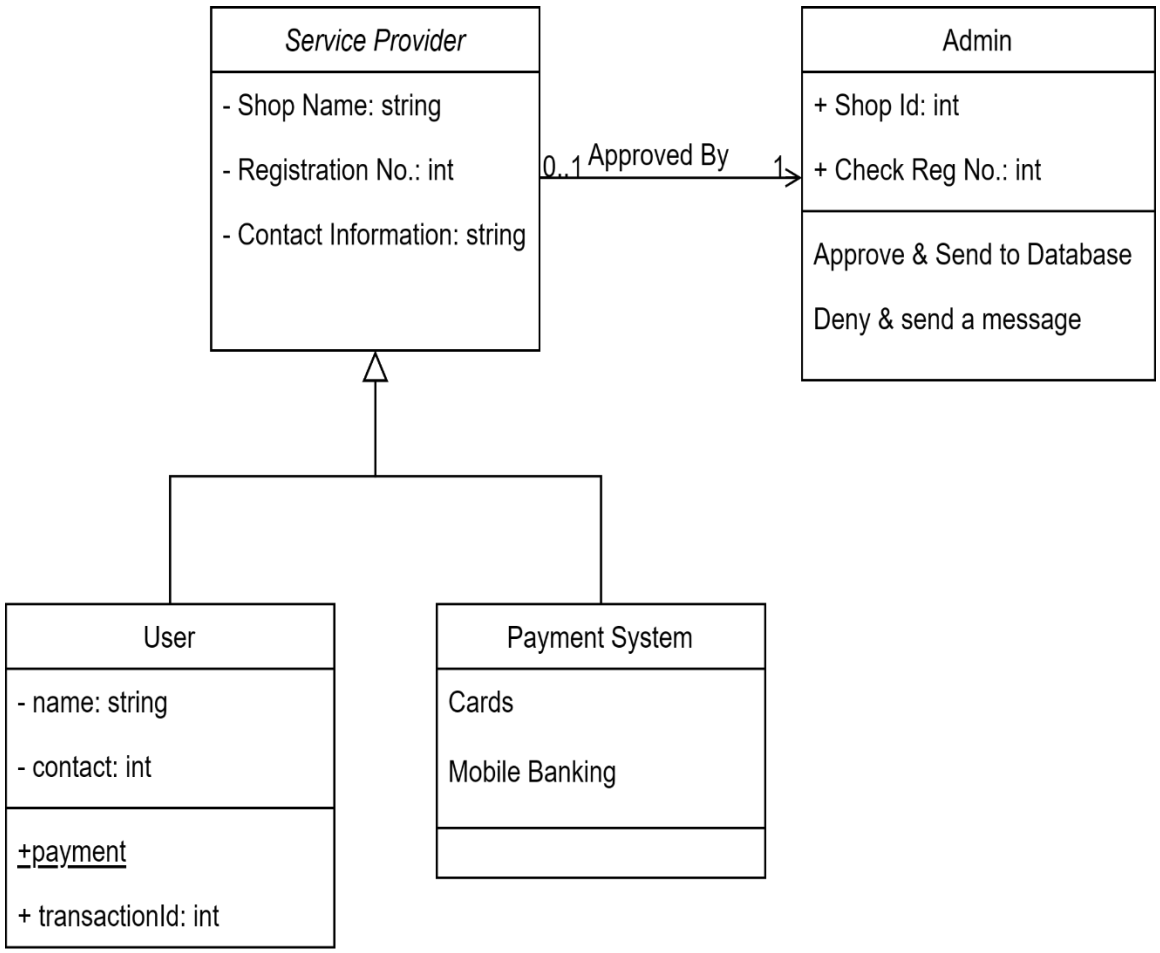


Figure 3.6: Class Diagram

3.7 Entity Relationship Diagram

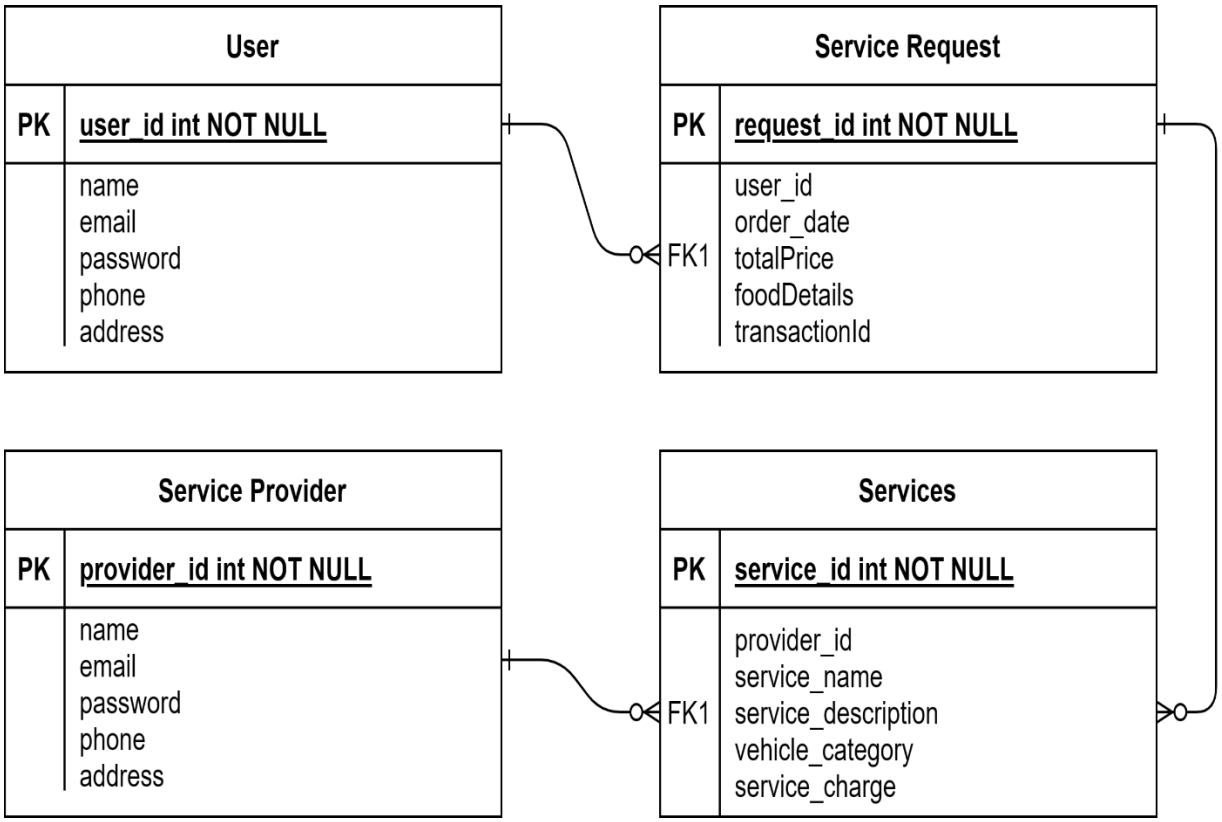


Figure 3.7: Entity Relationship Diagram

CHAPTER 4

DESIGN SPECIFICATION

4.1 FRONT END DESIGN

A user-friendly online application called the SEND MECH Platform was created to support a community of services and make it simple for them to order their favorite services. This platform's interface has been carefully designed to offer a seamless and interesting user experience.

1. An easy-to-use interface

- Users are welcomed by the homepage's aesthetically appealing design, which includes tantalizing culinary images and an easy-to-use navigation menu.
- Users may easily discover services, or other users thanks to the top search bar.

2. Users' profiles

- Each user gets a unique profile page where they may display their personal information, favorite services, and culinary accomplishments.
- Users can follow other users to create a network of like-minded services.

3. Services Cards:

- Dish cards entice viewers to click and continue exploring by featuring appetizing service imagery, dish names, and a succinct description.
- Users may save their favorite services using the "Save" button.

4. Services Detail Page:

- A complete services page with explicit step-by-step directions, ingredients, and preparation time is opened by clicking on a services card.
- Users have the option to rate services, provide comments, and pose queries.

5. Easy Item Development:

- Users may easily share their favorite services thanks to an uncomplicated services creation tool that supports text and image upload.
- Users may contribute nutritional details, item swaps, and culinary advice.

6. Tags and Categories:

- For effective searching, services are categorized and tagged with pertinent keywords.

7. Flexible Design:

- For a smooth experience on desktop, tablet, and mobile devices, the platform is entirely responsive.

8. Notifications

- Users are kept involved in the community by receiving alerts for new followers, comments, and restaurant updates.

9. User-Interaction Features

- Users may host interactive culinary demonstrations using the amazing features.
- It is encouraged to use user-generated material, such as culinary videos.

10. Security and Privacy:

- User's data is protected by strong security measures.
- Users can change their privacy preferences.

In conclusion, the front end of the SEND MECH Platform is created to be a warm and user-centered environment for services to express their passion for services. It promotes a feeling of community while giving chefs of all skill levels a smooth and delightful experience.

4.2 BACK-END DESIGN

The backend development of a "SEND MECH Platform" entails developing the fundamental features that let users share and access special services. The main elements are briefly summarized as follows:

- **User authentication**: Use user registration and login features to make sure that access is safe. Protect user data by using encryption techniques.

- **Database Design**: Construct a dependable database design to keep user profiles, services, comments, and other pertinent information. Use a NoSQL database, such as MongoDB, or a relational database, such as MySQL.

- **Services management**: Create APIs that allow users to add, and amend their services. Include fields for the services' names, components, stages of preparation, and cooking time. Data integrity must be maintained by ensuring data validation.

  Implement search and filtering features so that consumers may explore services based on keywords, ingredients, cuisine, or dietary requirements.

Create user profiles for each user that show their follows, likes, and services they have posted. Permit users to follow and communicate with one another.

Users should be given the option to comment and rate services. Create a ranking system to assist customers in finding well-liked services.

Implement a notification system to inform users when a service has been updated, a remark has been made, or a new follower has joined.

Protection against typical web application vulnerabilities like SQL injection and cross-site scripting (XSS) should be ensured by using strong security measures.

Design crystal-clear, thoroughly defined API endpoints for front-end integration as well as potential future mobile apps.

- **Performance Improvement:**
  Improve Performance optimization: Make database queries as efficient as possible, employ caching where appropriate, and make sure the program can manage several concurrent users.

- **Scalability:** Create a scalable backend to support an expanding user base. For scalability, think about utilizing load balancing and cloud-based infrastructure.

- **Testing and debugging:** To find and address any problems, thoroughly test the program using unit tests, integration tests, and security audits.

- **Application deployment:** Place the application on a trustworthy hosting platform like AWS, Google Cloud, or Azure.

  Implement monitoring tools to keep tabs on the effectiveness of your applications and user interaction. Utilise analytics to learn about user behavior.

- **Compliance**: If necessary, make sure that data protection laws, including the CCPA or GDPR, are followed.

CHAPTER 5
IMPLEMENTATION & TESTING

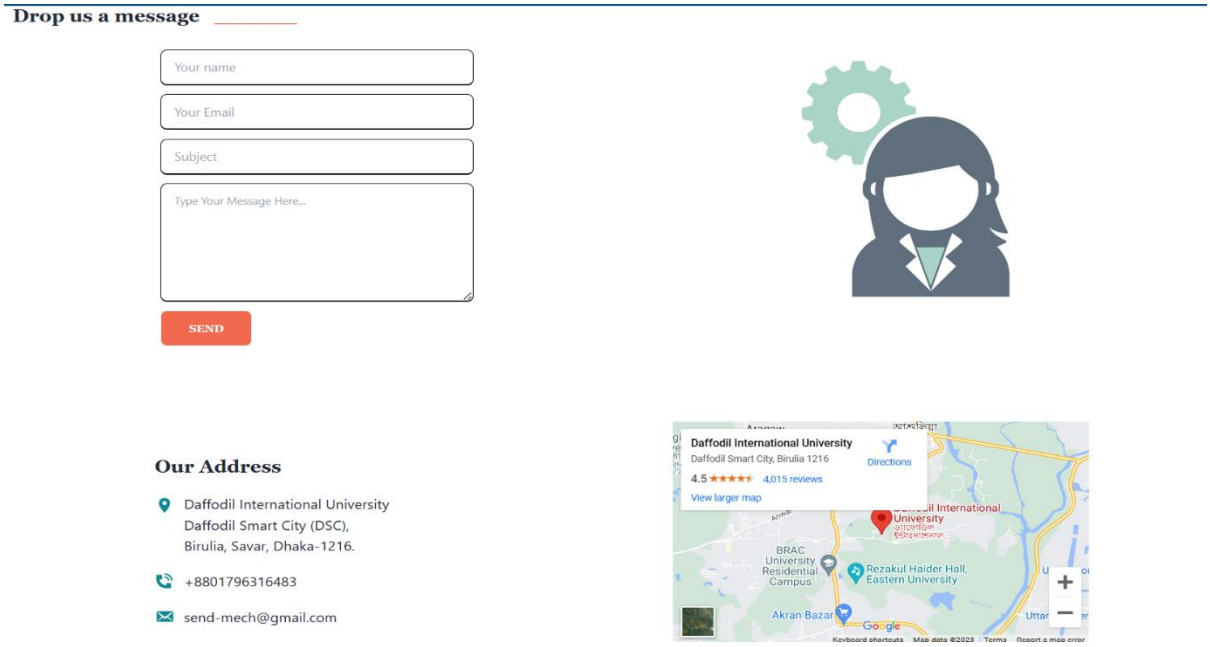


Fig 5.1 Contact page

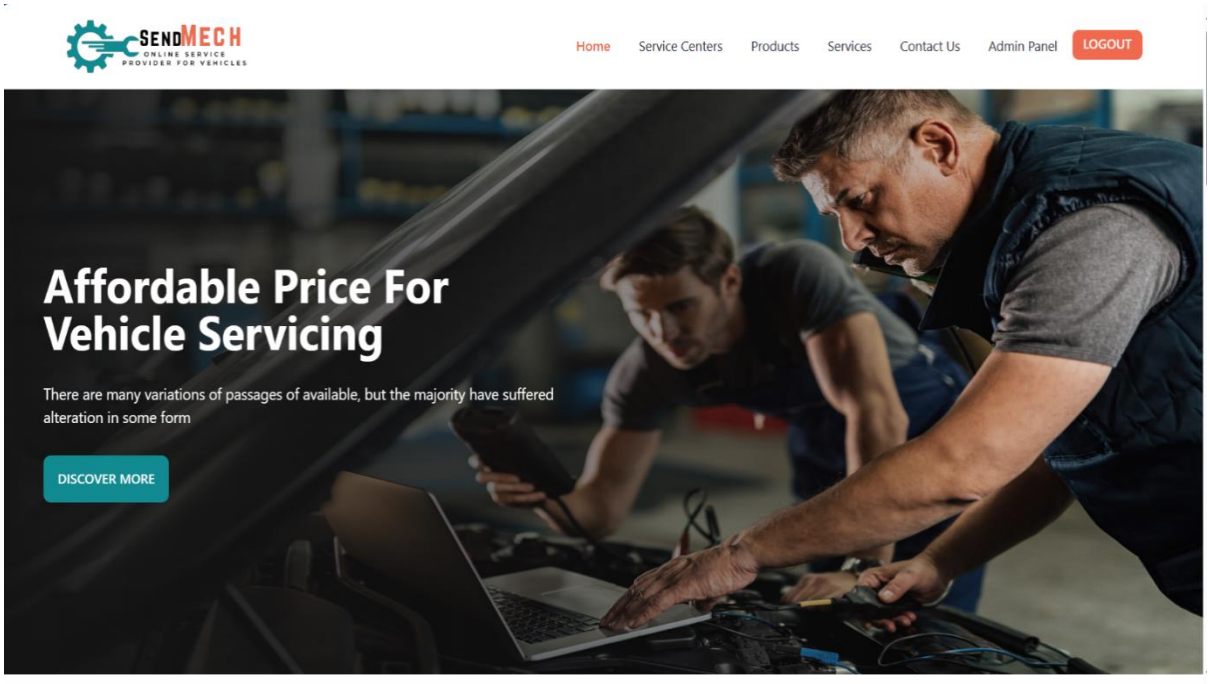


Fig 5.2 Home Page

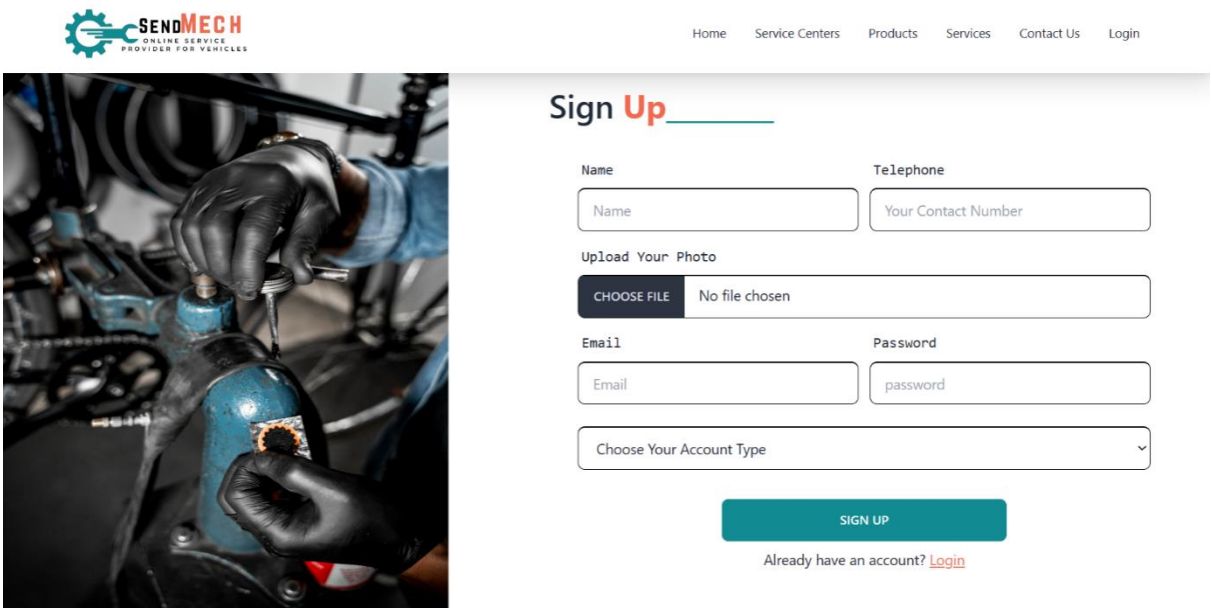


Fig 5.3 Sign up

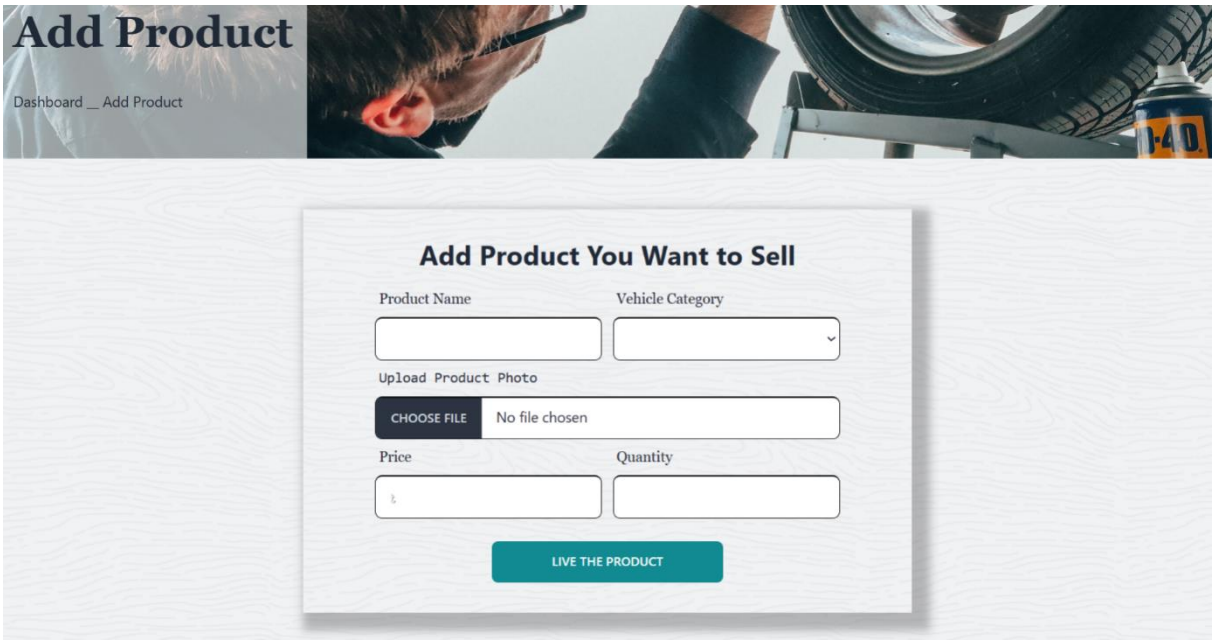


Fig 5.4 Add Products

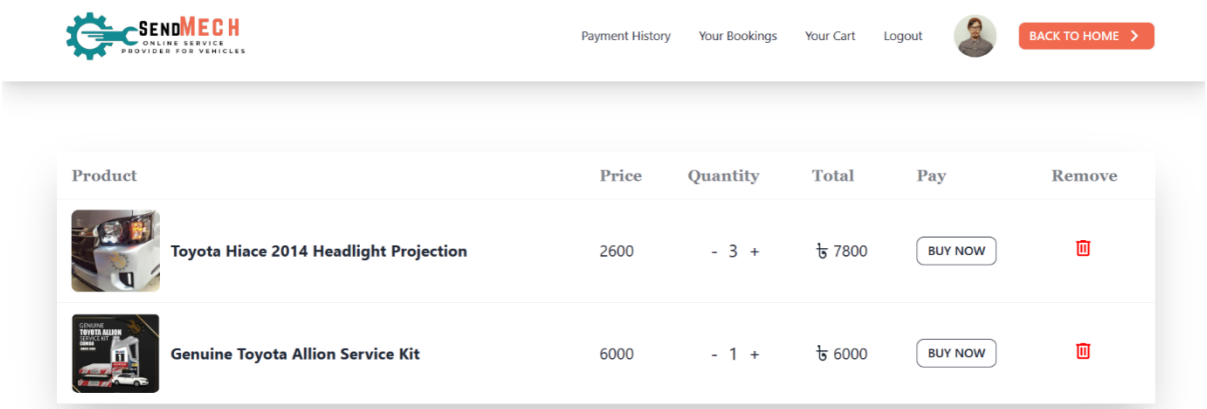


Fig 5.5 Product Details

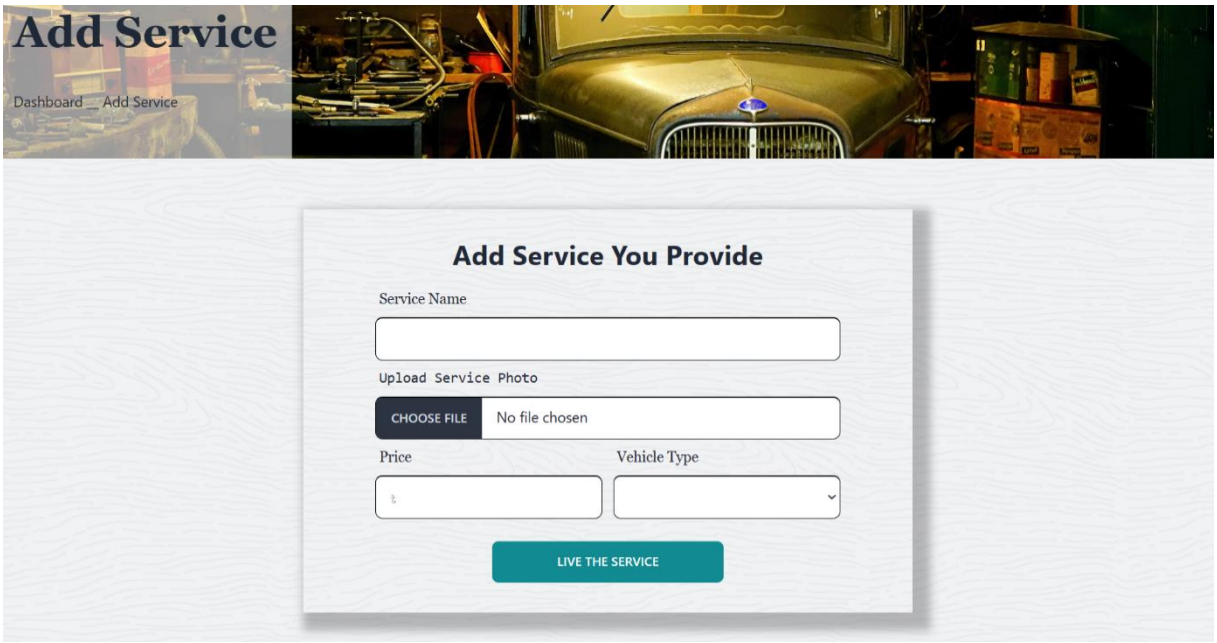


Fig 5.6 Add Services

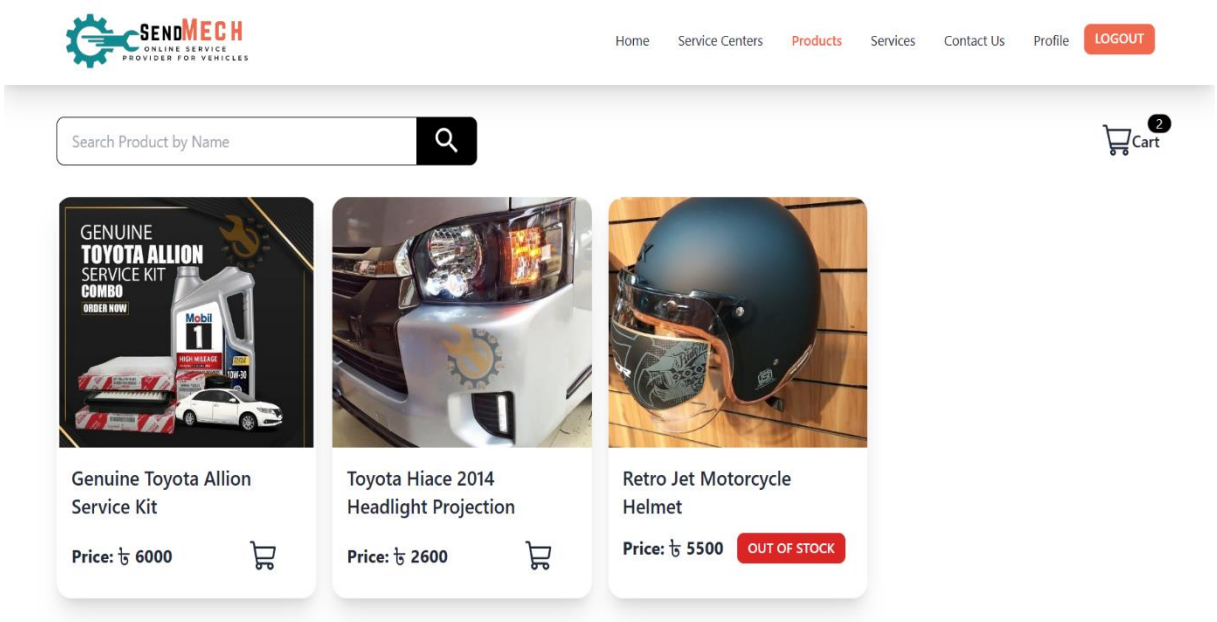


Fig 5.7 All Items

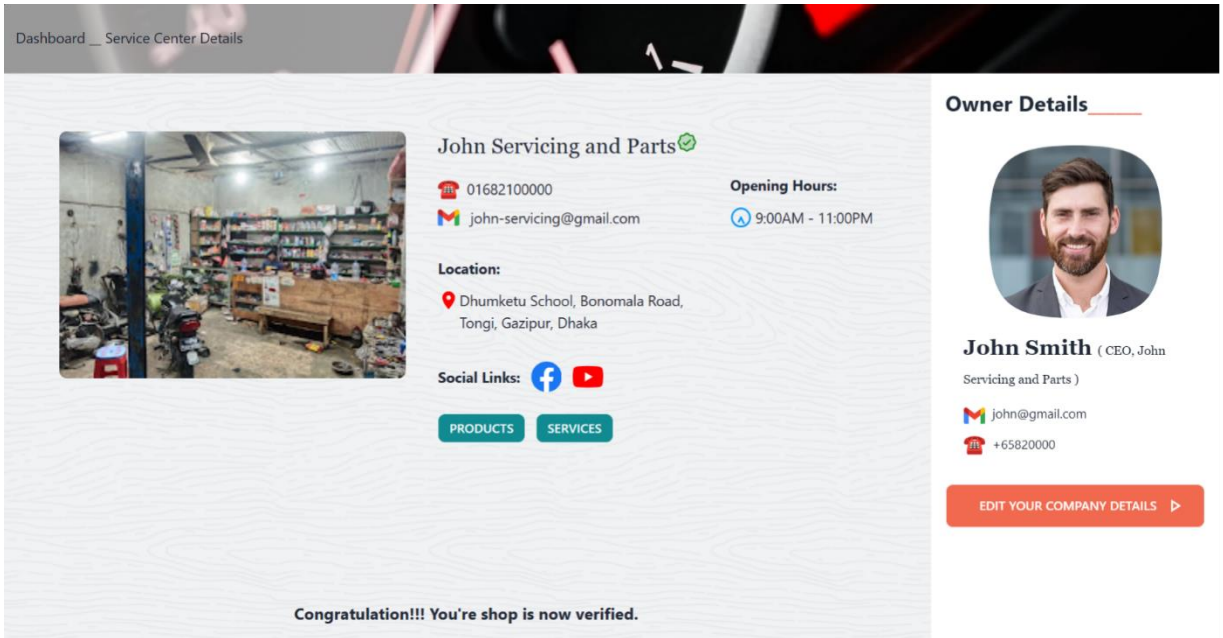


Fig 5.8 Seller Dashboard

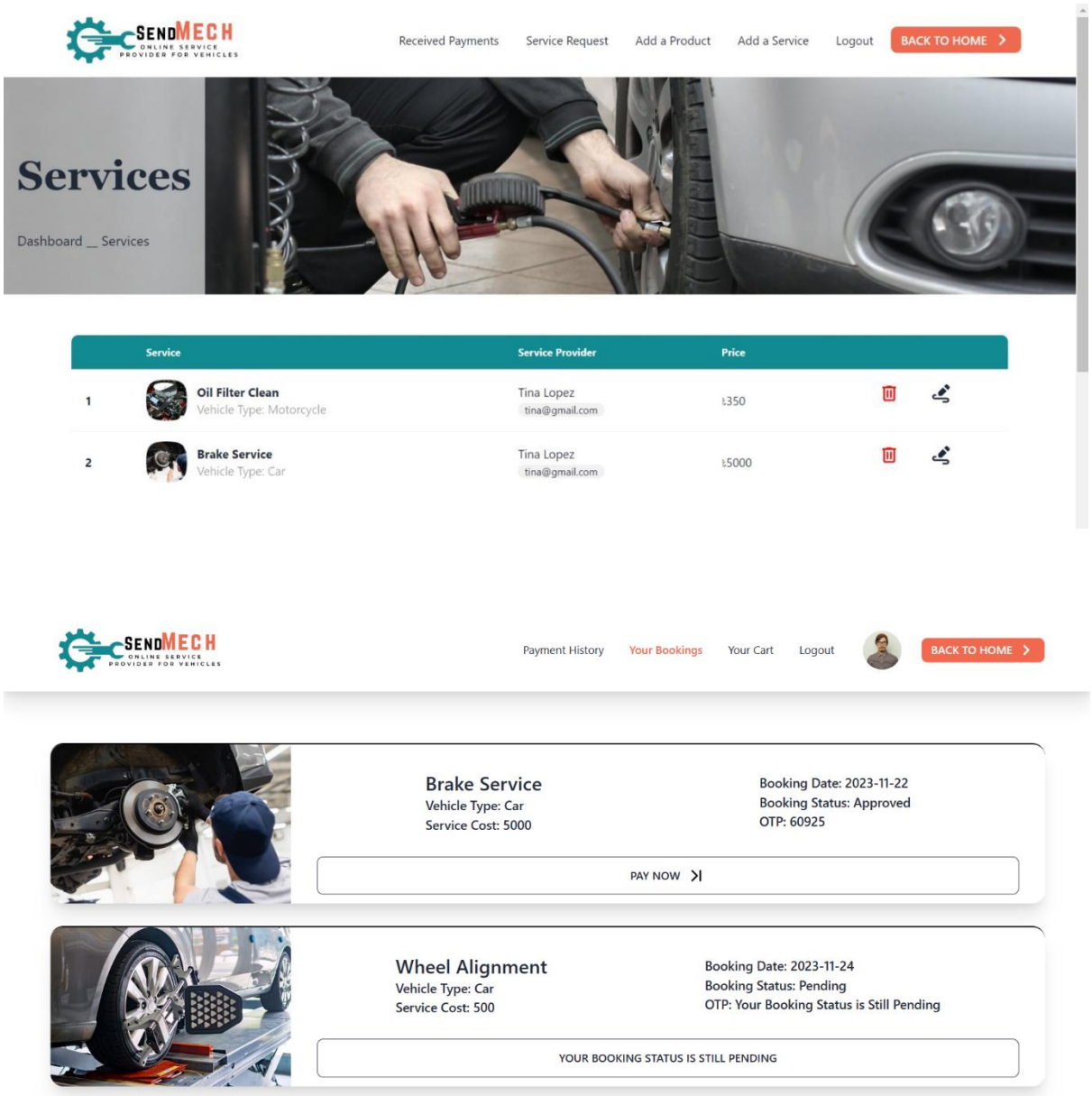


Fig 5.9 Seller details and Service list

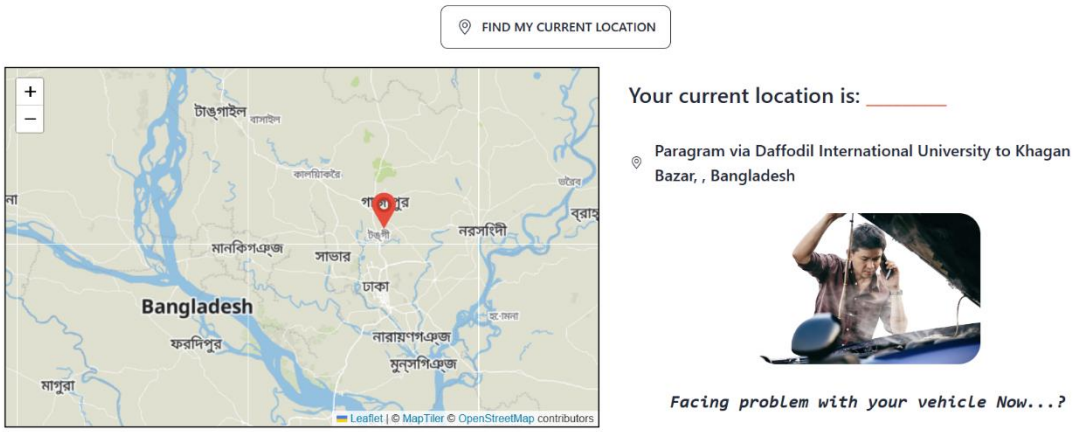


Fig 5.10 Find my location.

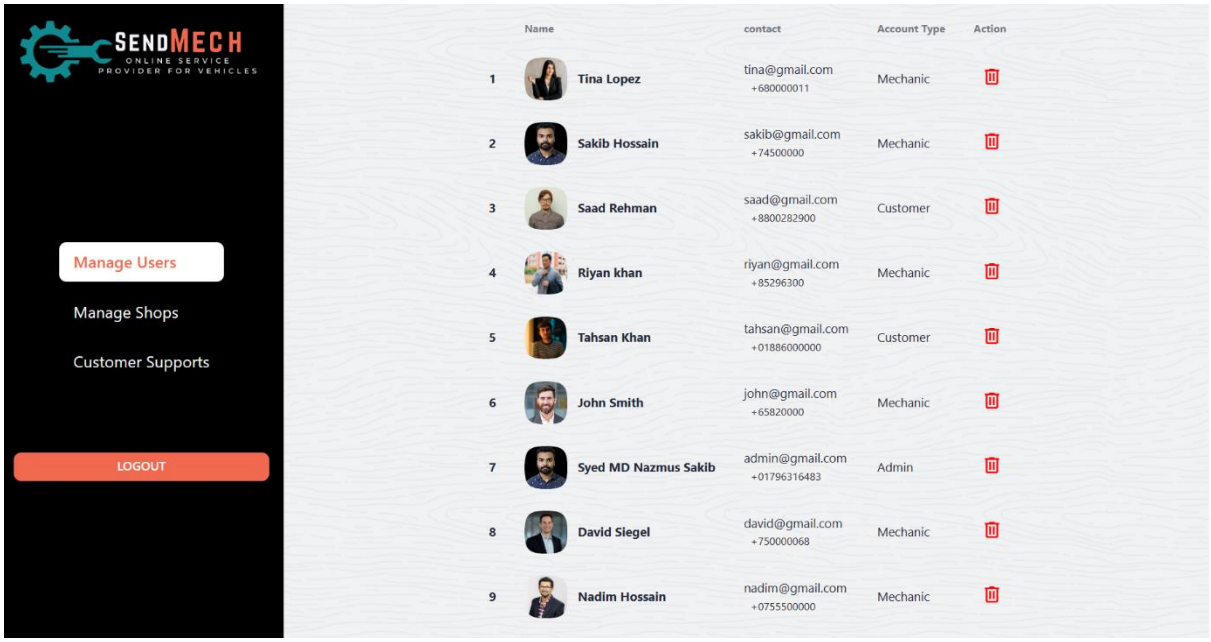


Fig 5.11 Admin Panel

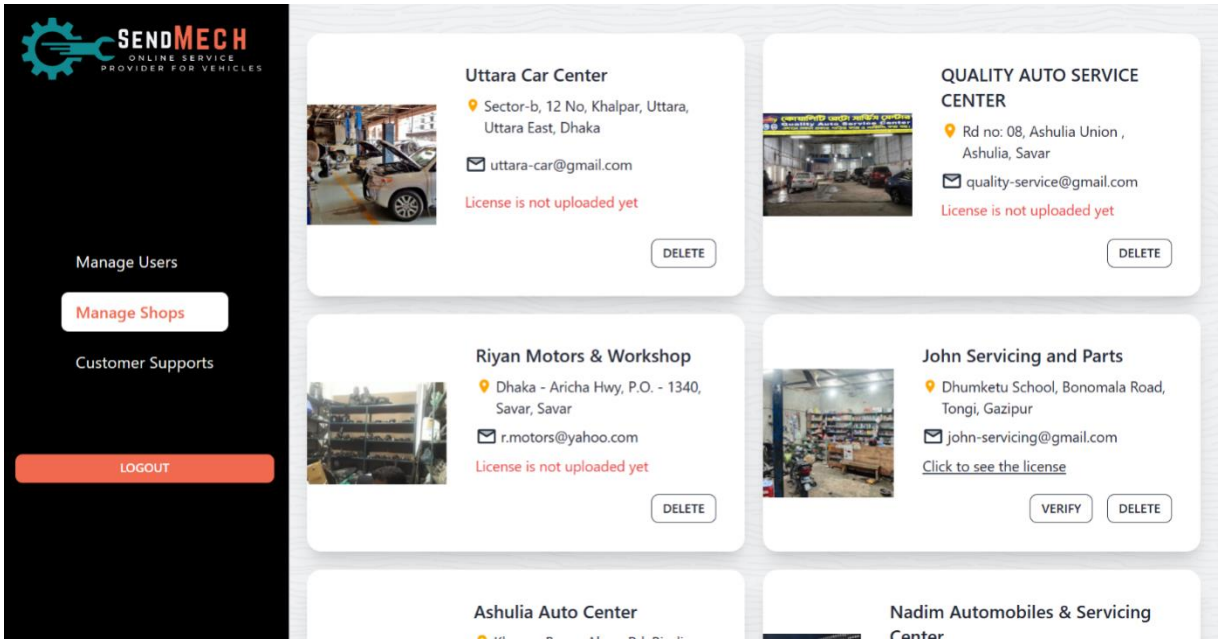


Fig 5.12 Admin Panel Shops

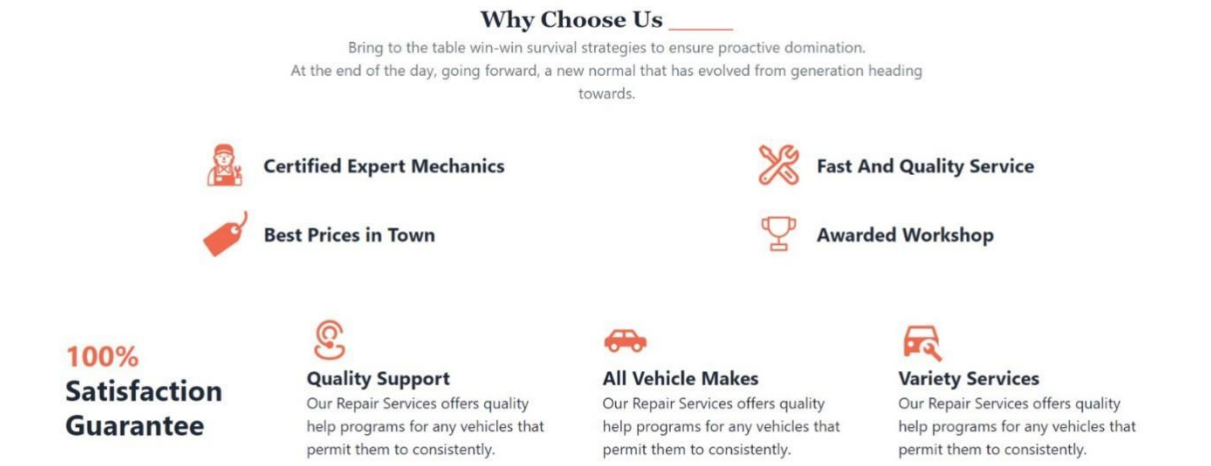


Fig 5.13 Why Choose Us

5.14 Feature Testing

The SEND MECH Platform is a website application created to connect services by enabling them to order their required services. Thorough feature testing is necessary to guarantee a seamless user experience and the effective operation of this platform. Here are some crucial feature tests to take into account:

- **User Sign-Up and Log-In:**
  - Verify that new users may create accounts by testing the user registration process.
  - Check that users can access the system using their login information.
- **Services Development:**
  - To check that users can add directions, and media (photos/videos), and test the development of new items.
  - Verify that users can classify items by type (for example, helmets or brake pads).
- **Searching for and Finding Services**
  - Check to see whether visitors can look for services using keywords.
  - Try out the filtering options for popularity.
- **A user's profile**
  - Create and update user profiles for testing.
  - Verify that users have access to their items, biographies, and profile pictures.
- **Interaction:**
  - Make certain that people may rate, and discuss services.
  - Check whether users may follow or unfollow other users to view their services on their dashboard.
- **Notifications:**
  - Test the alerts for new likes, comments, and follows.
  - Verify that emails are sent out as necessary as notifications.
- **Privacy and security:**
  - Conduct a vulnerability assessment to look for cross-site scripting or SQL injection.
  - Check to see if user information and passwords are encrypted and stored securely.
- **Adaptivity:**
  - Check the usability of the platform on various hardware and screen sizes.
  - Make sure the user interface adjusts properly for tablet and mobile devices.
- **Performance evaluation**

- ➢ Check the application's response time under various loads to make sure it can support several users at once.
- ➢ Search for sites that take a long time to load and improve them as needed.

❖ **Accessibility:**

- ➢ Conduct accessibility testing to confirm that the platform complies with WCAG standards and can be used by people with impairments.

❖ **Web Browser Support:**

- ➢ To guarantee consistent functioning, test the application on different web browsers (such as Chrome, Firefox, Safari, and Edge).

❖ **Backup and recovery of data:**

- ➢ Check to see that user-generated data, such as user profiles and services, is frequently backed up and is recoverable in the event of data loss.
- ➢ Make sure people may comment, and report offensive content.

❖ **Localization:**

- ➢ If the application is designed for a worldwide audience, make sure it works with diverse languages and locations.

❖ **Reporting and Reaction:**

- ➢ Make sure people may comment, report offensive content or contact support.

❖ **Payment (if appropriate):**

- ➢ Any subscription-based business should undergo testing for premium features and payment processing.

The Services Sharing Platform may be improved to create a pleasurable user experience and develop a thriving community of services aficionados who can easily share their distinctive services by undertaking rigorous feature testing.

5.15 Test Schedule:

Test Phase Time
Testing plan create 1 Week
Unit testing During development time.
Component test During development time.
Testing user interfaces 1 Week
Performance testing 1 Week
Accessibility testing 1 Week

CHAPTER 6
IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Society

An online program called SEND MECH Platform has had a significant influence on society, changing how people interact with services, culture, and technology. This ground-breaking platform has improved our daily lives in several ways, including:

Culinary Experimentation: By offering a broad and varied selection of services from all over the world, SEND MECH websites promote culinary experimentation. Users' culinary horizons are broadened and a deeper appreciation for other cuisines is fostered by the ease with which they may get and test out different ideas.

Preservation of Culinary Heritage: Specialty services are frequently passed down through generations. Using this platform, people may share and preserve the culinary customs of their families. It acts as a digital archive for cultural heritage, making sure that special services don't disappear over time.

Community Building: Websites that share services foster active online communities of services. Users may connect with people who share their love of cooking, offer advice, and develop deep relationships based on their shared enthusiasm for services. This promotes a feeling of unity and belonging.

Reduced Services Waste: Having access to a variety of services enables consumers to make the most of the ingredients at hand and thus reduces service waste. Promoting thoughtful consumption and lowering the environmental effect of services production, is in line with sustainability objectives.

Entrepreneurship and Income Generation: For some people, posting their favorite services online might open up new business prospects. By teaching cooking lessons, selling services e-books, or even founding services-related enterprises, they may make money off of their culinary abilities.

Platforms for sharing services: are instructional resources that aid in the development of people's abilities. Beginners can pick up tips from seasoned chefs and eventually advance in the kitchen.

Time and Convenience: By providing easy-to-follow services with detailed ingredient lists and directions, these platforms make meal planning simpler. Users benefit from time savings Energy Use: Power is used to run the data centers and web servers that host the platform. These processes can have a sizable carbon footprint, particularly if the platform is subjected to heavy

traffic and data storage needs.

Delivery Services: Some service-sharing websites include integrations with service delivery, which might result in more packaging waste and transportation-related carbon emissions.

Use of Digital Devices: If not properly disposed of or utilized, the growing use of digital devices to access services and instructions can increase electronic waste and energy consumption.

In conclusion, a services-sharing platform has transformed society by promoting our site, conserving cultural traditions, forming communities, minimizing services waste, increasing convenience in our everyday lives, fostering skill development, and offering economic possibilities. The common language of services has expanded our gastronomic experiences and brought people closer.

6.2 Impact on Environment

"SEND MECH" is acutely aware of its impact on environmental sustainability and is deeply committed to reducing its ecological footprint. This section delves deeply into the project's expected environmental impact, elucidating the multifaceted strategies and initiatives in place to actively promote sustainability.

- **Environmentally Friendly Service Provider Practices:**

At the heart of "SEND MECH" is a vision of a network of service providers dedicated to environmentally friendly practices. The platform actively encourages and incentivizes service providers to implement environmentally friendly practices in their operations. This includes practices like responsible waste disposal, incorporating energy-efficient procedures, and using environmentally friendly tools and materials in their services.

- **Reduced Carbon Footprint:**

"SEND MECH" aims to make a significant contribution to lowering carbon emissions caused by stranded or malfunctioning vehicles. The platform's quick and efficient matching algorithm, combined with real-time tracking capabilities, reduces the amount of time vehicles are idle. This reduction not only ensures prompt assistance but also reduces unnecessary fuel consumption and emissions, contributing to a greener environment.

- **Transactions without paper:**

"SEND MECH" promotes a paperless approach to transactions throughout its ecosystem, which aligns with global sustainability goals. The platform actively eliminates the need for traditional paper-based documentation, from service requests to payment processing. This environmentally conscious approach not only reduces deforestation but also reduces the environmental impact of paper production and disposal.

- **Education and Awareness:**

"SEND MECH" acknowledges the transformative power of education and awareness in fostering environmentally responsible practices. The platform launches educational campaigns aimed at users, service providers, and the general public. "SEND MECH" contributes to a collective understanding and commitment to environmental conservation by raising awareness about the environmental impact of vehicle breakdowns and the tangible benefits of adopting sustainable practices.

- **Continuous Improvement:**

"SEND MECH" does not have a static goal of sustainability, but rather an ongoing commitment to evolution and improvement. Regular assessments, feedback mechanisms, and collaborations with environmental experts ensure that the platform is always at the cutting edge of incorporating the most effective and cutting-edge sustainable practices. This commitment to continuous improvement demonstrates the project's commitment to maximizing its positive environmental impact.

"SEND MECH" aspires to cultivate a community of users and service providers who are actively engaged in the pursuit of environmental well-being, in addition to providing efficient emergency vehicle assistance. The project recognizes the complex interplay of societal, environmental, and economic factors and strives to achieve a harmonious balance that benefits both current and future generations.

6.3 Ethical Aspects

- **User Privacy and Data Security:**

Respecting user privacy and data security is a cornerstone of "SEND MECH's" ethical framework. The platform uses strong security measures to protect user data, ensuring that sensitive information, such as location data and transaction details, is handled with the utmost discretion. Transparency in data usage policies, as well as obtaining user consent, are essential components of an ethical approach to privacy.

- **Service Providers Are Treated Fairly:**

"SEND MECH" is committed to creating a fair and equitable environment for service providers. Ethical considerations include fair compensation for service providers' expertise and services. The platform seeks to eliminate all forms of discrimination and to ensure that all service providers are treated with dignity, regardless of race, gender, or background.

- **Accessibility and Inclusivity:**

Inclusivity and accessibility are woven into the fabric of "SEND MECH." The platform is intended for users with a wide range of needs and abilities. This includes considerations for disabled users, ensuring that they can easily access and use the platform's features. Beyond design, inclusivity includes language preferences and cultural considerations.

- **Community Engagement and Responsiveness:**

"SEND MECH" understands its obligation to the communities it serves. The platform actively engages with local communities, soliciting feedback, recognizing cultural differences, and addressing specific needs. Ethical community engagement entails being responsive to community feedback, taking proactive steps to address concerns, and positively contributing to the social fabric.

- **Anti-Discrimination Measures:**

The platform is committed to fostering a discrimination-free environment. Discriminatory practices in service delivery and user interactions are prohibited. "SEND MECH" actively promotes diversity and inclusion, ensuring that all users and service providers are treated fairly and objectively.

- **Integrity in Advertising and Representation:**

"SEND MECH's" commitment to integrity is based on ethical advertising practices. The platform ensures that advertising content is honest, transparent, and accurately portrays the capabilities and limitations of its services. Clear communication about service charges, response times, and service availability helps users build trust.

- **Legal and Regulatory Compliance:**

"SEND MECH" complies with all applicable legal and regulatory standards. Compliance with laws governing data protection, service provision, and any other relevant aspects is required for ethical behavior. The platform is proactive in staying abreast of changing legal requirements and adapts its operations accordingly.

6.4 Sustainability Plan

Sustainability is an important component of "SEND MECH," and this section outlines the comprehensive sustainability plan that will guide the project's long-term commitment to environmental and social responsibility. From economic viability to community engagement, the sustainability plan takes a comprehensive approach to ensuring long-term positive impact.

- **Economic Viability and Financial Stability:**

The term "sustainability" for "SEND MECH" goes beyond environmental concerns to include economic viability. The project is dedicated to ensuring financial stability to continue providing dependable emergency vehicle assistance. Prudent financial management, revenue diversification, and partnerships that contribute to long-term economic sustainability are examples of strategies.

- **Scalability and adaptability:**

A project that can adapt and scale in response to changing needs and circumstances is considered sustainable. "SEND MECH" is built for scalability, allowing for strategic expansion into new geographic areas as well as the incorporation of new features and services.

Adaptability is critical to the project's long-term viability, as it ensures relevance in changing environments.

- **Empowerment and Resilience in Communities:**

"Sustainability" extends to the communities served by "SEND MECH." The project works actively with local communities, providing them with information, resources, and opportunities. To foster community resilience and self-sufficiency, initiatives may include skill development programs, educational campaigns, and collaborations with local businesses.

- **Technological Innovation and Future-Proofing:**

Technological innovation is central to "SEND MECH's" sustainability plan. The project pledges to stay on the cutting edge of technological advancements, leveraging emerging technologies to improve efficiency and user experience. Constant R&D efforts ensure that the platform remains technologically relevant and adaptable to future challenges.

- **Green Practices and Environmental Stewardship:**

The sustainability plan prioritizes environmental sustainability. "SEND MECH" actively promotes environmentally friendly practices within its operations and among its service providers. This includes initiatives such as encouraging the use of environmentally friendly tools, reducing waste, and implementing energy-efficient technologies. The project aspires to be an environmental steward, setting a good example by implementing sustainable practices.

- **Measurement and Reporting of Social Impact**:

A sustainable project embraces transparency in measuring and reporting its social impact. "SEND MECH" commits to ongoing evaluations of its social contributions, such as community engagement, user satisfaction, and service providers' well-being. Regular reporting ensures accountability and gives stakeholders information about the project's positive societal impact.

- **Collaborations and Partnerships:**

Collaboration is frequently used to achieve sustainability. "SEND MECH" actively seeks collaboration with organizations, businesses, and government agencies that share its commitment to sustainability. Collaborative efforts increase the impact of sustainability initiatives and contribute to the formation of a network of like-minded organizations working toward common goals.

"SEND MECH" aims to establish itself as a long-lasting and impactful solution by meticulously integrating these sustainability principles into its operational framework. The sustainability plan serves as a road map for the project, guiding it toward a future in which emergency vehicle assistance is not only efficient but also socially responsible and environmentally sustainable.

CHAPTER 7: CONCLUSION AND FUTURE SCOPE

7.1 Project Summary

"SEND MECH" emerges as a game-changing solution in the field of emergency vehicle assistance, combining innovation, efficiency, and a dedication to societal and environmental well-being. This section provides a concise yet thorough summary of the project's key aspects, accomplishments, and anticipated impact on users, service providers, and the broader community. "SEND MECH" represents a paradigm shift in the way emergency vehicle assistance is thought about and delivered. This cutting-edge platform introduces a seamless and user-centric approach to addressing vehicular breakdowns, forging unprecedented connections between distressed users and skilled service providers.

- **Key Features:**

"SEND MECH" is distinguished by its user-friendly interface, quick matching algorithm, and real-time tracking capabilities. Users can easily initiate requests for assistance, while service providers receive timely notifications and conduct efficient and secure transactions. The platform's dedication to user privacy, fair treatment of service providers, and ethical considerations elevate its standing even further.

- **Technological Advancements:**

As a driving force, the project embraces technological innovation, with the Agile development model ensuring adaptability and responsiveness to changing needs. Paperless transactions, real-time tracking, and intelligent matching algorithms demonstrate the platform's dedication to efficiency, security, and a smooth user experience.

- **Societal Impact:**

"SEND MECH" goes above and beyond the scope of a traditional service platform by actively contributing to societal well-being. Ethical considerations, anti-discrimination measures, and accessibility initiatives highlight the project's commitment to creating a welcoming and equitable environment. Community engagement programs amplify the platform's positive impact on local communities.

- **Environmental Sustainability:**

The project's commitment to environmental sustainability is an essential component. "SEND MECH" strives to be an environmental steward by reducing carbon emissions through prompt assistance and promoting eco-friendly practices among service providers. The project's sustainability plan includes economic viability, community empowerment, and green practices, positioning it as a model of environmentally conscious service delivery.

- **Future Prospects:**

As "SEND MECH" takes its first steps, the prospects are marked by continuous improvement, scalability, and a commitment to remaining technologically relevant. The sustainability plan lays the groundwork for long-term positive impact, economic resilience, and environmental

conservation.

To summarize, "SEND MECH" emerges as a holistic solution that transcends traditional boundaries, rather than just a service platform. The project is poised to redefine the landscape of emergency vehicle assistance, leaving an indelible mark on the communities it serves, thanks to its user-centric design, ethical considerations, and sustainability initiatives.

7.2 Scope for Further Development

The future scope of "SEND MECH" extends beyond its initial launch, presenting a roadmap for ongoing enhancements, expansions, and the integration of emerging technologies. This section delineates the envisioned trajectory of the project, outlining key areas for growth, innovation, and sustained impact.

Content for Section 7.2 - Future Scope:

1. Geographic Expansion:
"SEND MECH" envisions broadening its geographical footprint to serve a wider user base. Strategic expansions into new regions, cities, and communities will ensure that the benefits of prompt and reliable emergency vehicle assistance reach a more extensive population. Collaborations with local stakeholders will facilitate seamless integration into diverse environments.

2. Integration of Smart Technologies:
The project's commitment to technological innovation paves the way for the integration of smart technologies. Future iterations of "SEND MECH" may incorporate features such as Internet of Things (IoT) connectivity for real-time vehicle diagnostics, artificial intelligence for predictive maintenance, and advanced analytics for proactive service recommendations. These innovations aim to enhance the overall efficiency and predictive capabilities of the platform.

3. Diversification of Services:
Beyond emergency breakdown assistance, "SEND MECH" anticipates diversifying its service offerings. This could include additional services such as routine maintenance scheduling, roadside fuel delivery, and integration with smart vehicle systems. The goal is to evolve into a comprehensive solution catering to various aspects of vehicular needs.

4. Enhanced User Engagement:
Future developments in "SEND MECH" will focus on elevating user engagement. This involves the introduction of interactive features, personalized recommendations based on user preferences, and a robust feedback system. Social features that enable users to share positive experiences and connect with the "SEND MECH" community will foster a sense of belonging.

5. Continuous Sustainability Initiatives:
"Sustainability" will remain at the forefront of the project's endeavors. The sustainability plan will evolve with the incorporation of additional eco-friendly practices, partnerships with environmental organizations, and initiatives that contribute to carbon offset programs. "SEND MECH" aims to set new benchmarks for environmentally conscious service platforms.

6. Community-Centric Initiatives:
The project envisions deeper community engagement initiatives that go beyond emergency assistance. Collaborative efforts with local organizations, sponsorship of community events, and educational programs will strengthen the bond between "SEND MECH" and the communities it serves. These initiatives aim to empower and uplift residents.

7. Research and Development:
An ongoing commitment to research and development will drive the project's evolution. Continuous exploration of emerging technologies, user preferences, and industry trends will inform updates and improvements. The agile development model will ensure that "SEND MECH" remains at the forefront of innovation.

8. Global Partnerships:
"SEND MECH" aspires to forge global partnerships with like-minded organizations, businesses, and governmental bodies. Collaborations on an international scale will facilitate knowledge exchange, cross-cultural adaptations, and the establishment of best practices. Global partnerships will contribute to the project's global impact and influence.

The future scope of "SEND MECH" is dynamic and ambitious, rooted in the project's commitment to adaptability, sustainability, and the continuous enhancement of user experiences. As the project unfolds, it aims to not only meet but exceed the expectations of its users and stakeholders, positioning itself as a pioneering force in the realm of emergency vehicle assistance.

References:

[1] “Efetch.com” Available at: https://efetch.om/car-repair-at-home>>, Last accessed on 24-03-2024 at 10:00 pm.

[2] “GoMechanic.in” Available at: << https://gomechanic.in/car-repair-near-me>>, Last accessed on 25-03-2024 at 10:30 pm.

[3] “FixiGo.in” Available at: << https://fixigo.in/>>, last accessed on 26-03-2024 at 11:00 pm.

[4] “Pathao.com” Available at https://pathao.com/bn/>>, last accessed on 27-03-2024 at 11:30 pm.

[5] “AutoGuru.com” Available at << https://www.autoguru.com.au/>>, last accessed on 10-04-2024 at 11:30 pm.

[6] “lubemobile.com” Available at https://www.lubemobile.com.au/ >>, last accessed on 11-04-2024 at 09:30 pm.

[7]“myautoshop.com” Available at <<https://myautoshop.co.nz/ >>, last accessed on 12-04-2024 at 11:00 pm.

[8] “driveu.in” Available at: https://www.driveu.in/>>, last accessed on 14-04-2024 at 11:00 pm.

[9] “cardekho.com” Available at: <<https://www.cardekho.com/ >>, last accessed on 16-04-2024 at 11:00 pm.

Appendix A

Course Outcomes, Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Addressing

Title: SEND MECH - Online Service Provider for Vehicles

Student ID: [201-15-14094]

CO Description for FYDP

CO	CO Descriptions	PO
Phase -I		
CO1	Integrate recently gained and previously acquired knowledge to identify a **Online Service Provider for Vehicles** problem for the Final Year Design Project (FYDP)	**PO1**
CO2	Analyse different aspects of the goals in designing a solution for this FYDP	**PO2**
CO3	Explore diverse problem domains through a literature review, delineate the issues, and establish these goals for the FYDP	**PO4**
CO4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the FYDP	**PO11**
Phase -II		
CO5	Design and develop technical solutions and system components or processes that meet specified requirements, ensuring compliance with public health and safety standards, as well as considering cultural, socioeconomic, and environmental factors in this FYDP	**PO3**
CO6	Choose and apply appropriate methodologies, resources, and contemporary engineering and IT technologies to address complex engineering processes, encompassing prediction and modelling, while adhering to relevant constraints in this FYDP	**PO5**
CO7	Analyse societal, health, safety, legal, and cultural considerations, along with associated responsibilities, in the context of professional engineering practice and the resolution of this problem, employing logical reasoning guided by contextual understanding.	**PO6**
CO8	Comprehend and evaluate the enduring sustainability and impact of professional engineering endeavours in addressing intricate engineering challenges within social and environmental frameworks.	**PO7**
CO9	Implement ethical principles and adhere to professional standards and norms in this FYDP	**PO8**
CO10	Capable of operating proficiently both individually and as a team member or leader across diverse teams and interdisciplinary settings in this FYDP.	**PO9**

CO11	Proficiently communicate with the engineering community and broader society regarding complex engineering endeavours, including the ability to comprehend and generate comprehensive reports and design documentation, as well as provide and receive clear instructions throughout this FYDP.	**PO10**
CO12	Acknowledge the importance of self-directed and life-long learning within the evolving landscape of technology, and possess the readiness and capability to engage in lifelong learning endeavours.	**PO12**

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP), and Attainment of Complex Engineering Activities (EA)

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP):

SN	EP Definition	Attainment	CO	Justification (With Knowledge Profile)	References
1.	**EP1: Depth of Knowledge required**	Yes	CO1, CO2, CO3, CO5, CO6, CO7 and CO8	The project covers **Engineering Fundamentals (K3)** through process modelling, data design, and front-end development, showcasing strong engineering principles application. The project tackles **Specialist Knowledge (K4)** by integrating front-end and back-end design, interaction design, and user experience (UX), utilizing HTML, CSS, JavaScript, for the front end, and NodeJS for the back end, demonstrating expertise in web-based mechanical platform for vehicles.	**Page no:** [12,14-16,21], **Section:** [3.1, 3.3, 3.4, 5.1, 5.2] **Page no:** [17-24], **Section:** [4.1, 4.2, 4.3, 5.1, 5.2, 5.3]
				The project applies **engineering practice & design (K5)** by integrating design requirements like user interface, security, scalability, customization, compatibility, accessibility, and reliability, ensuring a robust and user-centric travel management system aligned with design principles. The project	**Page no:** [12-16], **Section:**

				addresses **engineering practice & technology (K6)** by employing HTML, CSS, JavaScript , ReactJs ,NodeJS, MongoDB , emphasizing safe, scalable development with MERN stack's MVC framework and Composer.	[3.1, 3.3, 3.4, 3.5] **Page no:** [17-20], **Section:** [4.1, 4.2, 4.3, 4.4]
				The project covers **research literature K8** by reviewing analogous platforms, UI/UX studies, security protocols, personalization algorithms, and industry trends, enabling informed decision-making for integrating innovative features into this system.	**Page no:** [8-10], **Section:** [2.2, 2.3]
2.	**EP2: Range of Conflicting Requirements**	Yes	CO2, and CO7	The project confronts **EP-2** by addressing challenges like integrating diverse features while maintaining user experience, balancing security with functionality, scalability, real-time data synchronization, evolving industry standards, privacy regulations compliance, and implementing effective recommendation systems through careful planning, flexible development, and continuous adaptation.	**Page no:** [11] **Section:** [2.4, 2.5]
3.	**EP3: Depth of analysis required**	Yes	CO2, and CO6	The project tackles **EP-3** by prioritizing solutions like contemporary front-end design for enhanced user experience and selecting Laravel for streamlined back-end development, addressing challenges such as user interaction optimization, platform accessibility, and scalability to provide a superior mechanical platform for vehicles.	**Page no:** [17-20], **Section:** [4.2, 4.3, 4.4]

4.	**EP4: Familiarity of Issues**	Yes	CO8	The project fulfils **EP-4** by integrating insights from travel management into development, optimizing processes, enhancing user experience, ensuring data security, and contributing to industry efficiency and effectiveness, bridging Computer Science and Engineering with the travel domain for impact beyond CSE boundaries.	**Page no:** [8-11], **Section:** [2.2, 2.4]
5.	**EP5: Extends of application codes**	No	CO5	N/A	N/A
6.	**EP6: Extends of stakeholders involved and conflicting requirements**	No	CO8	N/A	N/A
7.	**EP7: Interdependence**	Yes	CO5	The project meets CEP, **EP-7** by addressing high-level problems across stages, ensuring data integrity, security, and performance in database implementation, optimizing user experience through intuitive front-end design, and conducting comprehensive testing.	**Page no:** [21-23], **Section:** [5.1, 5.2]

Addressing CO11 with Complex Engineering Activities (EA) [Some or all of the following]:

SN	EA Definition	Attainment	CO	Justification	References
1.	**EA1: Range of resources**	Yes	CO11	The development of this system leverages a skilled team across domains, meticulous financial resource allocation for infrastructure, marketing, and development, and utilizes tools like XAMPP, Visual Studio Code, and various programming languages, frameworks, and databases for effective execution.	**Page no:** [20], **Section:** [4.4]
2.	**EA2: Level of interaction**	No		N/A	N/A
3.	**EA3: Innovation**	No		N/A	N/A

4.	**EA4: Consequences for society and the environment**	Yes		This project emphasizes social impact and environmental sustainability by enhancing trip efficiency, promoting sustainable travel practices, and ensuring ethical considerations such as strong security, privacy, and transparent business practices, fostering societal well-being and environmental stewardship.	**Page no:** [26-31], **Section:** [6.1, 6.2, 6.4]
5.	**EA-5: Familiarity**	Yes		The Comparative Analysis for " SEND MECH - Online Service Provider for Vehicles " evaluates market competitors like Car Dekho and AutoGuru.com to highlight SendMechs unique features, security, personalization, and customer engagement, enriching market understanding and informing strategic decisions for enhanced competitiveness and value proposition.	**Page no:** [7-10], **Section:** [2.1, 2.3]

Addressing CO (4, 9, 10, and 12):

SN	COs	Attainment	Justification	References
1	CO4	Yes	The project captures **CO4** by integrating financial management practices, including budgeting, resource allocation, cost management, and risk mitigation, ensuring efficient fund distribution, monitoring expenditures, and identifying optimization areas while maintaining quality.	**Page no:** [4-5], **Section:** [1.5]
2	CO9	Yes	The project upholds ethical practices by prioritizing user privacy, maintaining transparency in data usage, providing fair suggestions, respecting cultural sensitivities, and promoting accessibility, fostering trust,	**Page no:** [28], **Section:** [6.3]

			transparency, and integrity among stakeholders.	
3	CO10	No	N/A	N/A
4	CO12	Yes	The project's implementation phase emphasizes lifelong learning through diverse testing protocols, automated frameworks, and CI/CD pipelines, ensuring ongoing improvement and adaptation to emerging tech trends, with results analysis refining the platform for enhanced effectiveness.	**Page no:** [21-25], **Section:** [5.1, 5.4]

Project report

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