

**VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM**


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**by**

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### **Abstract**

The study focused on the development of web-based booking system for vehicle repair and maintenance management, highlighting the importance of VRMMS in reducing downtime, controlling maintenance expenses, and ensuring uninterrupted operations in transportation, logistics, public services, and commercial fleets. An all-inclusive software-based system called a VRMMS is made to automate every step of car maintenance and repairs. It includes functions including maintenance history recording, repair scheduling and tracking, and billing reports that provide an overview of the costs associated with maintenance and repairs. Additionally, the goal of this study is to improve the effectiveness of the whole car repair and maintenance lifecycle for administrators and clients, from making appointments to handling maintenance and repairs. Nevertheless, the intended study will not include the purchasing of car parts or the inventory control of car parts. The study's findings indicate that, in terms of functionality, usability, security, and reliability, the ISO 25010 is highly accepted. The thirty respondents who participated in the study include; seven car owners, five students, five professors, five IT professionals, two owners of auto repair shops, and six mechanics. The indicators were measured using a 4 – point Likert Scale. The study concludes that the vehicle repair and maintenance management system was designed effectively, performing its intended duties such as record keeping, scheduling, service history viewing, mechanic job allocation, and report generation. It is also proven to be functional and usable according to ISO 25010. The research recommends a hybrid strategy framework for vehicle repair and maintenance management systems, including an SMS reminder service, pre and post diagnosis features, custom portals, AI chat, updated inventory, promotional materials, and image upload capabilities.

**Keywords:** *Vehicle, booking, scheduling, vehicle repair, mechanics, car owners, clients, auto repair owner, maintenance.*



## **Chapter 1**

### **THE PROBLEM AND ITS SETTING**

#### **Introduction**

Effective vehicle repair and maintenance management poses essential challenges for enterprises spanning transportation, logistics, public services, and commercial fleets. Ensuring vehicles remain in optimal condition, minimizing downtime, and controlling maintenance costs are pivotal to maintaining uninterrupted operations and enhancing productivity. Technological advancements have opened doors to innovative solutions, with Vehicle Repair and Maintenance Management Systems (VRMMS) emerging as a transformative approach to address these challenges.

A VRMMS is a comprehensive software-based system planned to mechanize the entire vehicle repair and maintenance process. It encompasses features like scheduling and tracking repairs, documenting maintenance histories, and generating billing reports that summarize the expenses involved in the repair and maintenance. By consolidating various components of vehicle maintenance into a unified platform, VRMMS empowers enterprises to achieve heightened efficiency, improved safety, and substantial cost savings.

In addition, this study aims to improve and enhance the efficiency of the entire vehicle maintenance lifecycle, from scheduling routine inspections to managing repairs and maintenance tasks. This system aims to provide a centralized platform for tracking vehicle repair and maintenance, optimizing maintenance schedules, and facilitating quick

response to issues, ultimately ensuring fleet reliability, minimizing downtime, and maximizing cost-effectiveness in the management of a diverse range of vehicles.

### **Background of the Study**

A vehicle is a revolutionary, self-propelled invention that has transformed the transportation of goods and people from one place to another. It is usually consisting of four wheels and an engine and powered by fuel. A vehicle grants individuals the opportunity to commute anywhere they want without getting anxious about how far they need to travel just to get to the destination. Additionally, in emergencies, calling an ambulance might take a significant amount of time to reach a specific location. With the help of a vehicle, it allows individuals to rush their relatives to the hospital with ease. Moreover, with the mobility of various vehicles, it enables an individual in transporting perishable goods in a span of hours or days and protect it from getting rot.

However, with daily vehicle usage, it is inevitable that these vehicles will sustain damage as the days pass by. Primarily, vehicle owners do not have the knowledge to perform maintenance on their own. As a result, they will have it repaired by the mechanic in an auto repair shop. Nevertheless, repair shop owners cannot accommodate a huge volume of clients in a single day due to the limited space of the repair shop itself. Moreover, repair shop owners use a manual approach of scheduling the appointment for repair and maintenance making it tedious to schedule an appointment.

As a result, fixing these cars takes a significant amount of time. Furthermore, updating schedule information can be time-consuming when mistakes are made and

changes are needed. Additionally, repair shop owners are having a tough time with the record keeping transaction with the clients such as the previous problem of the vehicle and the repair and maintenance performed to fix the problem.

Besides, repair shop owners struggle to identify loyal clients for discounts and vouchers. Lastly, the use of the manual approach makes it time consuming to make a transparent and accurate invoice that breaks down the expenses involved in performing the repair and maintenance done on the vehicle. As a result, the mentioned problems hinder the productivity of the repair shop, and it also affects the satisfaction of the clients. The aforementioned problems are the basis for an immediate solution.

The conducted study will address the dilemma faced by repair shop owners, introducing a contemporary Vehicle Repair and Maintenance Management System customized to overcome their challenges. A system that automates the entire transaction from scheduling the appointment for repair and maintenance, to keeping the record of transaction in day-to-day operation down to creation of invoice to boost the productivity, minimize the errors, improve the transaction of the repair shop owners. A system that will provide the clients with a wonderful experience and boost their satisfaction.

### **Objective of the Study**

The main objective of the study is to develop a web-based system that will help repair shop owners facilitate managing the appointment of vehicle repair and maintenance scheduled by the client.

Specifically, the study aims to strive for the following objectives

1. Design a web-based repair and maintenance management system for auto repair shop owners with the following features:
  - a. Record keeping transaction.
  - b. Administrative Dashboard for managing the schedule of client.
  - c. User account that allows clients to book a schedule and monitor the progress of repair and maintenance.
  - d. Enabling admin and clients see the history record of the work completed by the mechanic.
2. To develop the propose system using HTML, CSS, JavaScript, Ajax, Bootstrap, PHP, and MySQL, Visual Studio Code, XAMPP, and Hostinger.
3. Test and improve the performance of the VRMMS in related to functionality, usability, security, and reliability.
4. Determine the level of satisfactoriness of the VRMMS using ISO 25010.

### **Scope and Limitations of the Study**

This study will focus on developing a vehicle repair and maintenance management system designed to assist auto restoration shop owners in scheduling repairs and maintenance requested by clients. Additionally, the study will also revolve around the record-keeping of the schedule made by the clients, which will serve as a maintenance history. Furthermore, it will include a repair tracking feature, enabling clients to monitor the status of their vehicle's repairs and maintenance. The study will also involve integrating a billing feature to generate invoices estimating service repair and maintenance costs. Payment transactions will be processed over the counter, with online payment options

excluded from the system. However, the purchasing of vehicle components and inventory management of vehicle parts will be excluded from the study. Additionally, SMS notifications for updating service status will not be utilized; instead, the system will employ email for sending updates.

### **Significance of the Study**

The following stakeholders listed below are the main beneficiaries of the study:

- Auto Repair Owners – This study will help auto repair shop owners automate and facilitate transactions in accommodating their clients.
- Mechanics– This study will benefit present and future mechanics by allowing them to access essential information and updates on repairs, diagnostics, and schedules from anywhere.
- Clients – This study will be beneficial for clients, especially those who are vehicle owners. They could choose their desired date and time to repair and perform maintenance on their vehicles and monitor the progress of the maintenance of their vehicles with ease.
- Future Researchers/Developers – This study will benefit future researchers as well as developers by allowing them to improve the developed system or fill the gaps present in the system.



## **Chapter 2**

### **CONCEPTUAL FRAMEWORK**

This study's conceptual model and operational definition of terms are presented in this chapter. This chapter also includes a list of cited literature and studies. The topics introduced in this chapter served as the foundation for the determination that the researchers made to support the study's claim and importance.

#### **Review of Related Literature**

This section provides key concepts and ideas relevant to the study. It includes discussions on vehicle service and maintenance management systems.

#### **Vehicle Management System**

According to the Law Insider Dictionary, a maintenance management system is a computerized database used to handle work orders and save historical data on the performance and repair of equipment. A vehicle maintenance system tracks the mention of equipment and provides maintenance notifications based on user-specified run-time restrictions. And, for each maintenance management system (MMS) activity number, break down the monthly invoice by maintenance area for all work units accomplished.

The maintenance management system is a web-based maintenance monitoring and information system that can store inventories, generate work orders, purchase orders, requisitions, schedule maintenance, and track the history and condition of equipment and spare parts.

According to the owner of the Choi's Kustomz Autoperformance Shop, Ric Malan (2023), vehicle repair, with a focus on vehicle repair and auto components, may be accomplished in any way conceivable through labor and parts to meet customer decisions and recommendations.

Based on the related study about Vehicle servicing, Hong, Kim, and Oh (2020) investigated the connection between Vehicle Maintenance and Repair Services. According to the researchers used an examination study with 319 clients by means of vehicle repair services to similar observe the properties of assurance, public, and commercial advantage features have on constant connection direction over the interference of service satisfaction, service approval, and client appointment aspects in the auto maintenance and repair service department. Findings indicated that the sureness and public advantages of vehicle maintenance and repair services influenced facility confidence, whereas the assurance and commercial assistances influenced facility approval. Customer involvement and long-term relationship continuity were not influenced by service trust, but they were when it facilitated service satisfaction. As a result, it was shown that the benefits of confidence, and that ability or facility worth quality in keep or restoration develops the utmost significant feature in manufacturing client appointment or enduring connection continuousness in the auto maintenance and repair vehicle service.

The latest article by Dr. Gomathy, Chandreaskhar, Mallikajun, and Dr. Geetha (2022) was revealed in their Academic Journal titled "The Vehicle Service Management System". Based on one research, vehicle owners may avoid unexpected automobile problems by routinely servicing their vehicles. Early identification of vehicle issues is

critical for preventing them from becoming significant problems. Vehicle technicians inspect and repair critical sections of the vehicle to ensure they are in excellent working instruction and resolve not to break down without prior notice. The researchers conducted the study to examine the daily activities and transactions that occur in vehicle repair facilities. The researchers collected test data and determined that most vehicle repair shops or garages continue to handle their everyday operations manually. Customer records are still manually input, as are client transactions, tracking of vehicle repairs as they are completed, updates on vehicle services, and billing. According to the findings of this study, vehicle repair businesses must upgrade their operations. Customers and vehicle dealerships will benefit from the system's implementation. Furthermore, a greater emphasis on applying technology to operate the business will assist auto garages in expanding and improving operational efficiency. Customers may quickly and comfortably do business with automobile service.

Another study on the topic by Furch (2022) of the University of Defense in Brno, Czech Republic, contended in their dissemination "New Trends in a Vehicle Maintenance System." Describes specific maintenance systems employed in the past, some of which are still in use now. Maintenance after use, preventive maintenance at predefined intervals, and condition-based preventive maintenance (predictive maintenance) are the primary maintenance methods. These maintenance systems were constantly refined, and new ones were introduced, such as the computerized maintenance management system, reliability-centered maintenance, and total productive maintenance. And discuss novel approaches for undertaking preventive maintenance utilizing telemaintenance, which may be simply characterized as remote-controlled maintenance.

## Online Booking

According to the Insider Dictionary, a booking or reservation system is associated with functionality made into the platform where the clients can create and manage their reservations and appointments at the client's establishment. And it also enables you, or the client, to make a booking for a desired service or product that the company offers.

Connected research in the study by Sorabh, Sharma Anshul, Pronika (2023) in an academic journal entitled "Online Vehicle Booking System" mentioned that a software program programmed formed to regulator the charge of vehicles is known as an automobile rental system. It has capabilities such as client management, car monitoring, record management, booking management, billing, and invoicing. Rental businesses may boost income, modernize processes, and provide better client service with the use of a rental system.

Based on the study of Pallevada, Kanuri, Posina (2021) on their academic journal entitled "Blockchain based decentralized vehicle booking services" mentioned that the online vehicle booking service recognized an increasing need today as per its suggestions an active and low-priced alternate. They can one call a taxi directly to any place at any time they want without the need for a general disruption. A static ratio of currency give to the client is reserved by the local government unit. This unified systems also tend to misuse and mislead of using their user's data and are also likely to cybersecurity. The best possible resolutions to this problem are to use Blockchain technology. The significant of this study is to evade this essential expert by creating a disseminated request. Not just get rid of the important personnel, blockchain technology also provides some structures like fixity, better transparency, safety. smart contracts can be established using resolution to achieve

decentralization. This keeps transparency, immutability and eliminates a central boundary of the authority to individual that may misuse the user's information for criminal actions.

### **Evaluation System**

The International Organization for Standardization (ISO) has formed a complete framework known as the ISO 25010 software quality model, sometimes referred to as the square (software application product quality requirements and evaluation testing) prototypical, to evaluate and measure the excellence of software products. it is proposed a set of important quality qualities and sub traits for assessing software systems.

ISO 25010 Model has criteria to assess if the system is accessible and efficient by its function, functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

### **System Analysis**

Related studies of ieexplore Academic journal entitled "The Federated Learning with Blockchain for autonomous Vehicles: Analysis and Design Challenges" by Pokhrel and Choi (2020) mentioned that the independent Blockchain-based Federated Learning (BFL) project for privacy-aware technology and effective message interacting, somewhere resident on-vehicle machine learning (OVML) classical informs be located changed and confirmed in a disseminated style. Change of numerical and replication results were presented importance many non-trivial answers and perceptions for adaptive and supporting BFL design. according on the systematic outcomes, the system interruption was lessened by misusing the network changing aspects and proved planned knowledge of change the way of coming frequency is verifiably working and proficient of driving the

system changing aspects to the wanted functioning point. It also known the better dependance on other blockchain constraints for an assumed set of frequency circumstances.

Based on the Philippines E-Journals written by Flores, Piedad Jr., Figueroa, and Tumamak (2021) academic journal entitled “A Sound-Based Machine Learning to Predict Traffic Vehicle Density” it mentioned that the circulation movement mishandling is an important trial trendy all countries exclusively in full cities. Another explanation is to exploit smart knowledges to forecast traffic flow. According to the study, occurrence range relating traffic comprehensive features is used as a pointer to predict and analyze the next five-minute vehicle density testing of the system. Sound occurrence and car strength are composed throughout a thirteen-hour data gathering procedure.

## **System Design**

In regards to the system design based on the Rethinking technology and engineering book, page 169-181, entitled “The Agile as a Vehicle for Values: A Value Sensitive Design Toolkit” it was written by Umbrello and Gambelin (2023) stated that technology takes mainly absorbed on what morals are and in what way they can be surrounded in technologies finished project. In this study, some work has been done to show the efficiency of some design methods. This part attempted to fill this hole by conversing the value sensitive design (VSD) method as a valued means of co-designing technologies as a toolkit for existing workflow organization. It was verified that VSD shows ability as a way of legitimately conniving technologies as well as development independent technology procedure invention.

According to the MDPI academic journal entitled “The System Design of a Vehicle Based on the Matrix Approach Using Functional Analysis of the Maintenance” by Meznar (2021) it mentioned that using of prolonged normal efficient study of maintenance in the design phase of vehicle structure study is offered for the first time, where a background of the step of components or parts. The use of these approaches allows a designer to be able to control, in early phase of the structure procedure, the significant factors that have a main result on vehicle maintenance. Prolonged useful investigation also lets to describe serious structures in the project requirement of vehicles. The important matter in useful study is the general process of research, the conclusions and findings with the straightforward goal of defining a usual of pointers for the confirmation of expectations and suggestions.

Based on the academic journal entitled “The Development of IoT Based Logistic Vehicle Maintenance System” by Mohammad, Masuri, Salim, and Razak (2021), it mentioned the effective repair and maintenance facility system is vital to guarantee the vehicle always in faultless form. Predictable method of maintenance had been confirmed to be deficient in terms of effectiveness and could source main impairment inside the vehicle system technology. A method of systematic maintenance is planned. This study focused on the logistics business for the reason that transport is vital on the location. They guarantee their process of providing the product and services runs efficiently without any difficulties. The Two main microcontrollers, which are Arduino UNO and NodeMCU were used to gather the sensor reading from DHT11 sensor and two pressure transducer sensors then send the data to MySQL database. There are two methods of display the data which are done a unauthorize webpage that performances as the data log and finished a picturing

method by using Grafana dashboard. The prototype system technology was applied effectively for the intended application devices.

Based on the study in Philippine E-Journals entitled “The Research Management Information System of Quirino State University” written by Hernandez (2021) of the Computer Science Department of the Volume 10, no. 1, it was mentioned that research and development office accomplish records by if an electronic system that will help in decision-making about the research paper. The Agile methodology was used in the development of the system. These histories are kept in computers and filing cabinets. The following difficulties are formed: scattered, unsecured, and prone to risk records; awkward record-keeping; and difficulty of generating reports. The study serves as a database of research activities and activities of faculty and staff researchers in the university. With the help of the system, the monitoring of the research data and information will be easier. It can also generate reports to address the needs of partner agencies as well as the university in terms of research and development actions.

## **SQL**

Kurniawan, Georgiana, Diaz, Einto, and Anzar (2018) on their academic journal entitled “Analysis and Design of Stock and Vehicle Information System” it mentioned that vehicle storing is an action of storing complete and offered for sale of vehicle in the storage area. However, the vehicle maintenance is an activity of keeping the vehicle made every sure dated often if it is stored in the storage area. The problems come across from this process are connected to planned data storage, wrongdoing and inefficient business processes affecting the loss of data. Thus, the establishment needs an information system that can backing vehicle storage and maintenance management. The information system is



developed using VB.Net as the programming language and Microsoft SQL Server for the database. It can rush business procedures, simplify stock input and examination, becoming a notice for booked maintenance, make things easier the process of recording, and searching for the vehicle fast, precisely, and presenting many reports regarding vehicle stock in the storage area.

## **HTML**

According to the academic article of IEEExplore regarding the use of HTML by Li, Zhang, and Cheng (2016) entitled “The Development of a Vehicle Monitoring System based on HTML and ASP. NET” it mentioned that the vehicle monitoring system client based on HTML and ASP.NET. Discussing to the source and consecutively public of vehicles to attain rational note, monitor vehicles. It will growth the competence, advantage and protection of the whole system. The system has a complete transformation interpretation and great market likely in information service system, logistic transportation management system, and emergency management systems.

## **CSS**

Muketha, and Omieno (2019) of the International Journal of Software Engineering and Application entitled “A Survey of Cascading Style Sheets Complexity Metrics” pointed out that the Cascading Style Sheets (CSS) is a web-based style sheet language that is used for the presentation of web documents. The CCS takes advanced from CSS1 to CSS3 and extensions to CSS known as CSS pre-processors have also emerged in the last few years. As is the example with constant software, CSS has characteristic effort that keeps on increasing which is unwanted, and system of measurement are required to

measure with the purpose of regulatory it. Though some web metrics take been planned in the works, the part of stylesheets is still lagging. Results show that few CSS-related metrics exist, and there is no evidence of proof for their mathematical correctness through the commonly known frameworks such as Briand framework and Weyuker's properties. In addition, they have not been systematically confirmed. In order to address this gap, future studies should focus on important and confirming new metrics for CSS and its pre-processors.

Based on Internet Histories Journal entitled "The Demonstrating and Negotiating the Adoption of Web Design Technologies: Cascading Style Sheets and the CSS Zen Garden" written by Wilson, Hassan, Aljohani, Viszi, and Nawaz (2022) it was mentioned that the Cascading Style Sheets (CSS) direct the visual proposal of a website through code and remain an alternated part of web history, while CSS continued projected as a technique of adding a design layer to HTML documents early on in the progress of the web, they only intersected from a bordering situation to normal usage after a long period of converting by web inventors occupied in the direction of "web standards". The CSS Zen Garden public inventiveness intended at exchanging, progress, and archiving possible approaches of CSS web design, whereas dealing with variable stages of browser provision for the technology. As the CSS Zen Garden was continued for over ten years, it also acts as an exclusive site to trace the ongoing progress of web project, and the imaginaries expressed in the Zen Garden can also be related to moral dimensions that effect the procedure of web design. Compared to Flash-based web design, work employed using CSS compulsory a better preparedness to exchange basis encryption outlines among browser platforms. Following the history of the accountable for making and contributing to the CSS Zen Garden shows

the ongoing effect of layer-based images of project separated from content inside network source code.

## **JavaScript**

Based on the study in the Technological University Dublin, entitled “Benchmarking JavaScript Frameworks” written by Mariano (2017), it discussed that the JavaScript programming language has been in being for many years now and is one of the most known, the most used front-end programming language in web development. The JavaScript is still developing and with the growth of JavaScript Frameworks (JSF), there has been a major revolution in how creators develop software today. Developers these days frequently use more than one framework to fulfil their job which has given rise to the problem for developers when it comes to choosing the right JavaScript framework to develop software which is rather due to the availability of uncontrolled numbers of JavaScript frameworks and libraries. Moreover, the use of JavaScript is getting more important for web development and so, there has been major views done about the performance aspect of the JavaScript programming language. Thus, this study investigates present research regarding the assessment of JavaScript frameworks with computer standards. A standard position application that pretends user events was developed which then combined the application of an application settled in each of the JavaScript frameworks selected. In addition, software difficulty metrics was presented, and experiments were led to measure these metrics. In general, this research aims to achieve a level of contrast which can further garner knowledge to comparing JavaScript frameworks.

According to the 2018 Zooming Innovation in Consumer Technologies Conference entitled “The Modern JavaScript Frameworks: A Survey Study” produced by Delcev and Draskovic (2018), it was elaborated that the collective influence of using on the web, about new web-based technology developed and familiarized changing aspects to web application platforms or mediums for users to use, in assessment to HTML as a programming language. JavaScript is a programming language that delivers an active website that dynamically connects with people who use it. JavaScript is used in today's innovative web development of web-based applications as a code script language. All four frameworks are based on MVC or similar architecture. In this study, the advantages and weaknesses of each framework have an impact on application speed, the behaviours of testing, and the adoptability of systems such as JS applications. Ways to advance code safety are also presented.

## **PHP**

According to the Procedia Manufacturing Book, entitled “A Comparative Study of PHP Frameworks Performance” written by Laaziri, Benmoussa, Khouilji, and Kerbeb (2019), it was explained that the improved order for web development have a direct high demand of using for primary and beginner of coding. The efficiency, capabilities, and scalability of using PHP framework is very important part of developing web tool code programming language. The PHP framework mean to made for user to easily understand and use of this software development application. It produces and limit the time portion to conduct a simple code and run upon using it. The software application PHP created to secure and stable coding part for user which involves good sympathetic of different type of PHP application. This study showed an evaluation that indicate a high efficiency of

using PHP for effective system deployment and for developer itself. The framework has a various function can understand and modify by means of understanding the context and algorithm.

## **Bootstrap**

Based on the Model- Driven Engineering and Software Development Paper entitled “The Art of Bootstrapping” proposed by Prinz and Mezei (2020), it was indicated that language workbenches are used to define languages using appropriate meta-languages. The platforms Language Lab and DMLA are using acquired bootstrapping. This paper compares these categories of bootstrapping and narrates them to the description of instantiation. In addition, the structural aspects of the bootstraps, the dynamism is also elaborated. Its illustrations how the bootstrap is related to the execution environment. To conclude, the level of variability is also discussed.

According to Salman, Alzaatreh, Sulieman, and Faisal (2021), their academic journal entitled “The Bootstrap Framework for Aggregating Within and Between Feature Selection Methods” showed that big data has become gradually dominant in many software applications. As a product, datasets with a sound reduction issue have to be used in the application for a clearer selection of multiple domains. Apparently, using this software application can change the methods of giving different outcomes as datasets run through the system itself. Gathering data to achieve the goal of different selections of methods helps the user resolve the concern and current problem of assessing the datasets into subsets. In this study, it applied a general approach to a framework and a collective of multiple datasets for selection. Based on the expanded datasets into subsets, it produced the raw data to

identify states of outcome remarks. The proponent gathered the calculated result and produced multiple choices of method to proceed to the next step of the procedure. Using two methods with the frame of feature selection, which collects the score and evaluates it to subsets from datasets, The study showed that the proposed framework used thirteen real datasets to subset and perform its characteristics. The evaluation shows the effectiveness of using a raw dataset to analyze and identify the subsets.

## **XAMPP**

Related to the study in the IEEE Xplore Journal entitled “A Framework Optimization in Social Media using XAMPP: A Systematic Approach,” written by Joshi, Kumar, Reshi, Sharma, and Dumka (2022), it was stated that XAMPP is an abbreviation that stands for different programming languages such as Cross-Platform, Apache, MySQL, PHP, and Perl, with the P’s standing for PHP and Perl individually. This research study used many supportive resources and web development. It discussed primarily independent on a close local host named XAMPP application; it similarly addresses processes that follow the system deployment. Also, it discussed cycle series medium and network request production formation. Commonly recollected for this study is to show the result of many research studies for customers to examine the issues they understand. This study discusses the modernization used in this type of procedure in PHP, and screen captures explain the things to see when using the XAMPP application.

Based on the Philippines E-Journal study entitled “A Web-Based Tourist Attraction Information System with Data Filtering for the Department of Tourism Office in the CALABARZON Region Area,” written by Benitez, Pulmano, Suarez, and Tabuada (2023),

using the XAMPP method to address the main software of this study, it was stated that the department of tourism of region IV-A promotes and informs their tourist destinations by developing a web-based technology system that allows the users to especially visit the website, indicating and promoting their tourist to the people. The system implements attachments, comments, likes, and shares with other tourists or locals who want to visit their desired destination upon seeing the system proposed by the department of tourism. The system is composed of different coding and editing tools to make it readable, entertain, and promote local intervention. Using XAMPP, PHPMyAdmin, HTML, and CSS to make it possible and working as a department of tourism encourages tourists to visit. The development of the sector of CALABARZON for promoting their local and beautiful destination.

Another study by Batika, Enriquez, and Soliman (2018) on the Philippine E-journal entitled “A Web-Based System for T-Rex Entertainment” by using XAMPP stated that T-Rex Entertainment Productions is an independent company that focuses on Filipino talents to make various entertainment contents that will make its productions matter. Since it is just a starting company, its goal is to amplify its content to the public and with the use of the website, they can achieve that because of its accessibility for fans, business partners, writers, and other people. This document contains the complete details in the development of a capstone project entitled, A Web-based System for T-Rex Entertainment. The proponents used several materials, such as the unified modeling language, related literature and studies and actual software programs, such as Adobe Dreamweaver CC, XAMPP, and phpMyAdmin to create the website. The validity of the system’s software characteristics

is in conformance with the ISO/IEC 25010 standard criteria, which were evaluated by 20 end-users and 10 IT experts. The overall evaluation is the system was rated as very good.

### **Visual Studio**

According to the Springer Link Journal entitled “Introducing Visual Studio Code” written by Del Sole (2021), it was indicated that Visual Studio Code is not just another evolved notepad application with syntax. Innovation and automatic indent. In other terms, Visual studio is a powerful tool for code and development setting specifically for the design and to make the web-based system more accurate and user can easily adopt and learn how to use the application for writing web, mobile, and cloud application using many programming languages, to make manageable to different kind of platform to evaluate or analyze the application software. The user can debugger and edit the using the application with ease.

### **Ajax**

According to Qiaoying and Chenghui (2010), in their academic journal entitled “The Application of Ajax Asynchronous Refresh in General Database Maintenance Systems,” the results showed that a typical network-based application medium is a synchronous revive device. The system shown has poor interaction with the user for its interface without simulation. More commonly, users want to remain on the page where they can interconnect with the system substitute server. Ajax is the way to update or create a create a smoother, stimulating interface. And the researcher narrates the result upon doing the test simulation of the mentioned system using Ajax. The researcher used a chronically

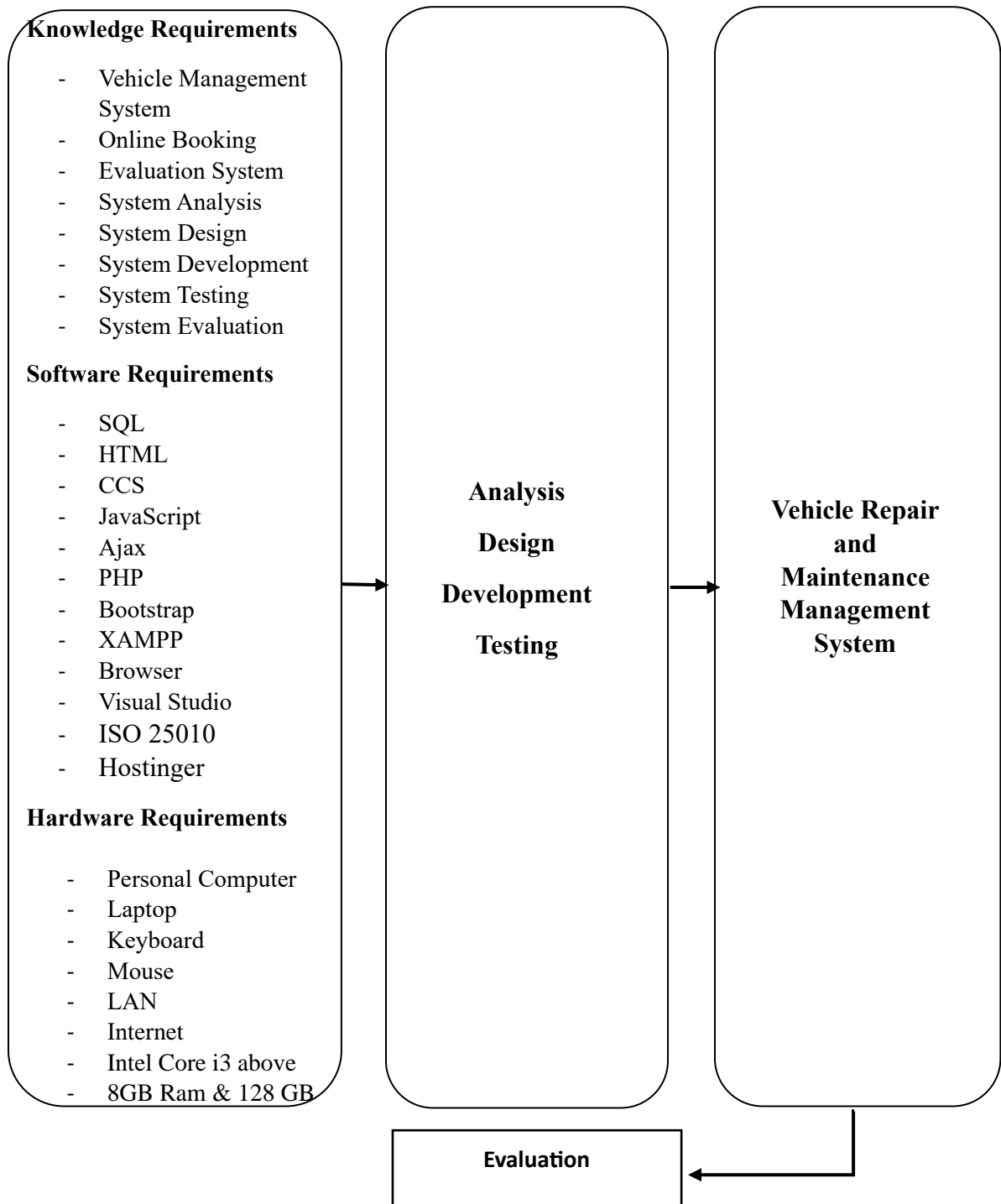


refreshed type of technology called Ajax. It has many varieties to be used by the users while stimulating the system itself.

### **Hostinger**

Based on the recent study of Budiyanto and Silalhi (2021) with their academic journal entitled “The Integration of lifting pump monitoring system and Hostinger with Internet of Things Based” it stated that the proposed system used to allocate the dirty water to landfills or water separated by their area. The combination of gathered information through system testing of pump flow and voltage monitoring system to assess the real problem arises during testing and monitor it twice a day in their site. The Inspector proposed in this study is to get the real time update and to know the situation while using pump and voltage. The results showed that the system evaluation strategy gathered the real time update and status of the pumping current of the water separation can check using android and web deployed system. The assessment of trial and error of the monitoring system was measured the current pump and voltage of less than five percent refer to the proposed outcome.

## Conceptual Framework



**Figure 1:** *Conceptual Framework of the study*

## **Definition of Terms**

**Booking** - According to the Insider Dictionary, a booking or reservation system is associated with process built into the stage whereby clients of the client can make and succeed their questions and bookings at the client's formation.

**Maintenance Management System** - According to the Law Insider Dictionary, a maintenance management system is a computerized database used to handle work orders and save historical data on the performance and repair of equipment.

**Management System** - According to dqsglobal a administration system defines the way in which corporations establish themselves in their structures and procedures to act analytically, guarantee smooth procedures and attain planned.

**Vehicle Service** - as the completion of a periodic service on a vehicle to guarantee its roadworthiness.

**Web-Based Application** - According to TechTarget Contributor Web-Based Request is a submission program that is kept on an isolated server over the internet.

## **Chapter 3**

### **METHODOLOGY**

This study will aim to generate a web-based vehicle repair and maintenance management system that will attempt to improve the competence and success of daily operations in car repair shops through innovative web-based solutions. In this section, it will discuss project design, project development, operation and testing procedures, and evaluation procedures for the study.

#### **Project Design**

The project design will be composed of System Architecture, Flowchart Diagram of the System, Entity-Relationship Diagram (ERD), Project Development Flowchart, and Use-Case Diagram that will illustrate the Vehicle Repair and Maintenance Management System (VRMMS) system.

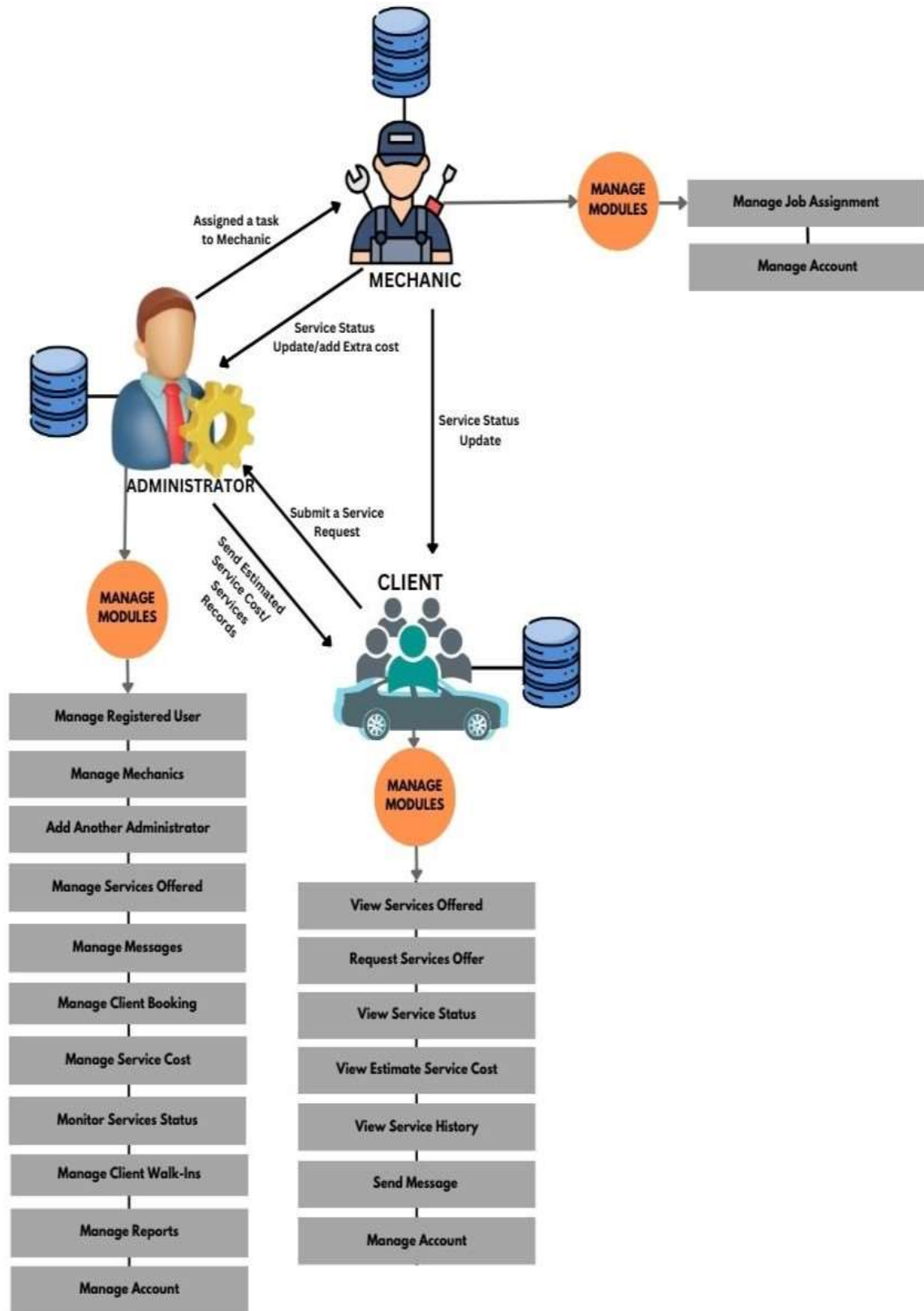
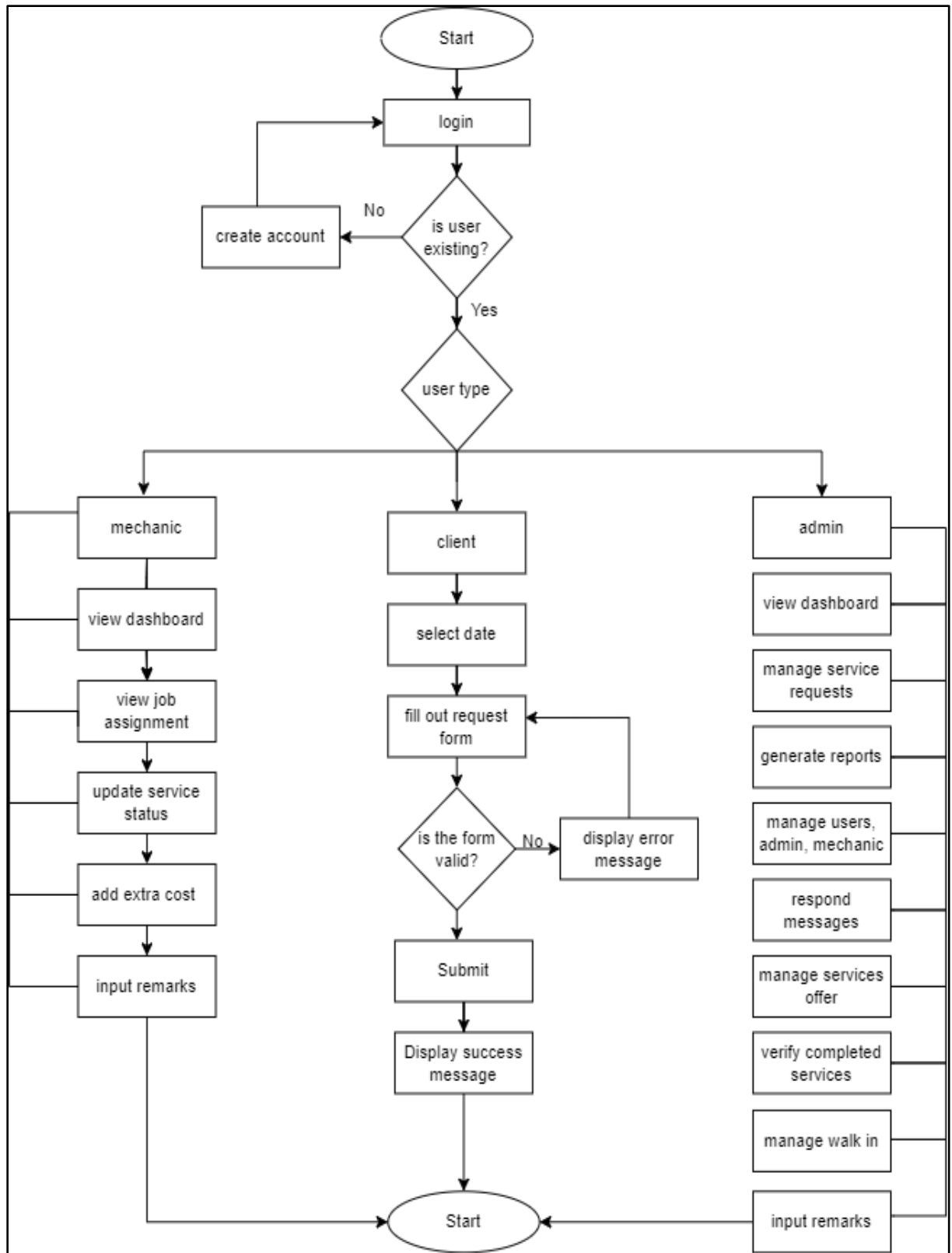


Figure 2. VRMMS System Architecture

The Vehicle Repair and Maintenance Management System (VRMMS) aims to enhance client service for those requiring vehicle repair and maintenance by implementing an efficient and well-designed system architecture. This architecture caters to three types of users: administrators (the shop owner), mechanics, and clients. By understanding their requirements, the architecture will be optimized to meet their specific needs.

The VRMMS will be specifically designed and developed for vehicle repair shops. It will be a web-based application that will enable users to request services through bookings or appointments on a chosen day. Additionally, the system will be accessible to guests who wish to explore the range of services offered and view the company profile. The administrator will be responsible for managing service offers, bookings, registered users, and mechanics, as well as adding additional administrators. Furthermore, the administrator will assign job tasks to mechanics. Mechanics will update the vehicle service status and incur extra costs. Both the administrator and clients will be able to track the status of the vehicle services. Upon logging in, users will be directed to the booking form. Clients will input necessary information during the booking process, and the administrator will approve the clients' booking requests.

The MySQL database will play a crucial role as the backend storage and management system, responsible for storing and managing all data related to clients, services, mechanics, and more.

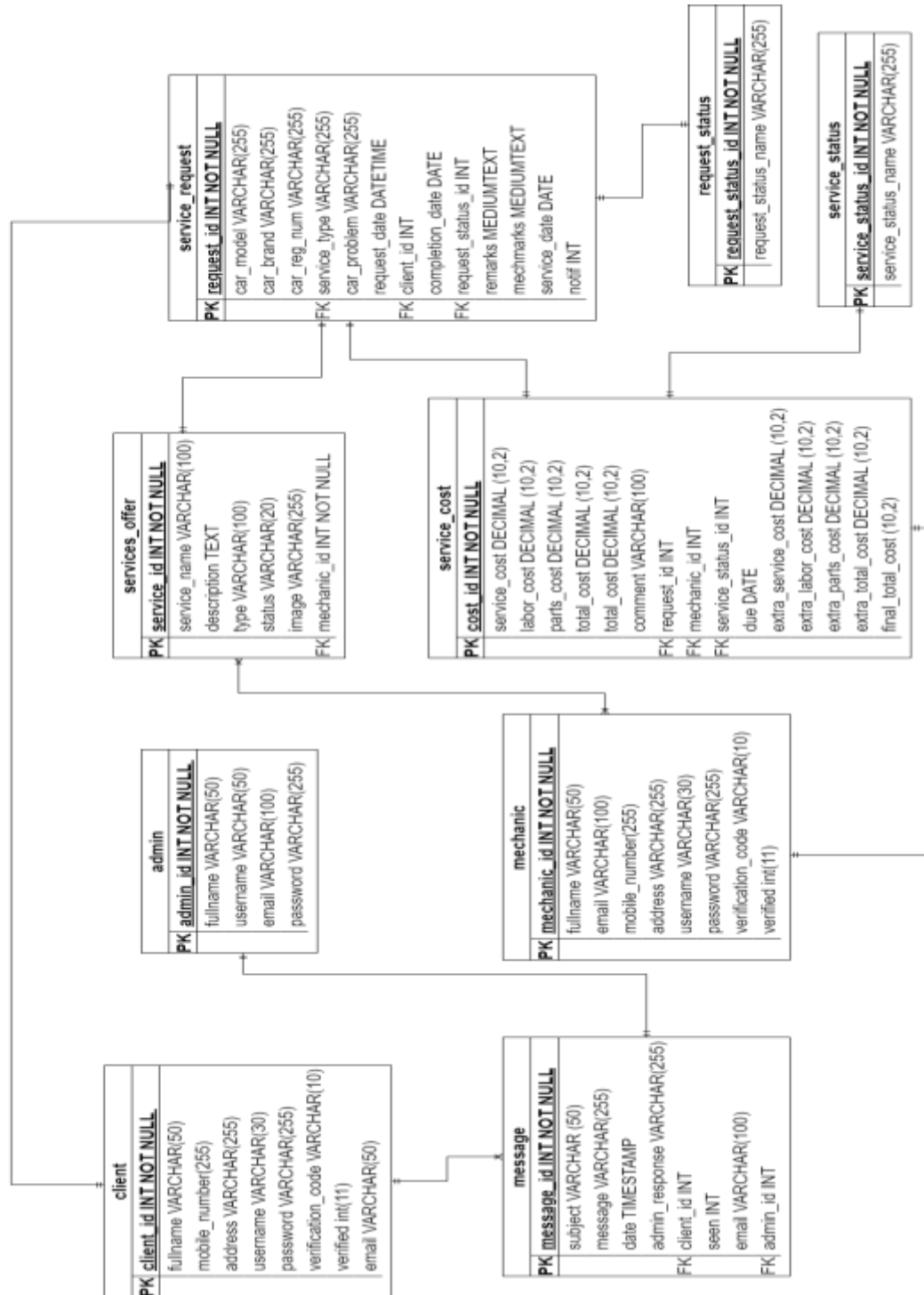


**Figure 3.** Flowchart Diagram for System

The system's process flowchart for vehicle repair and maintenance begins with customers creating accounts to log in and book service schedules. Once logged in, customers submit schedule forms detailing their repair and maintenance requirements. The submitted forms are then reviewed and approved by the admin, after which they move to the pending service request queue. The admin proceeds to assign a qualified mechanic to the approved service request. The assigned mechanic takes charge of the repair and maintenance tasks.

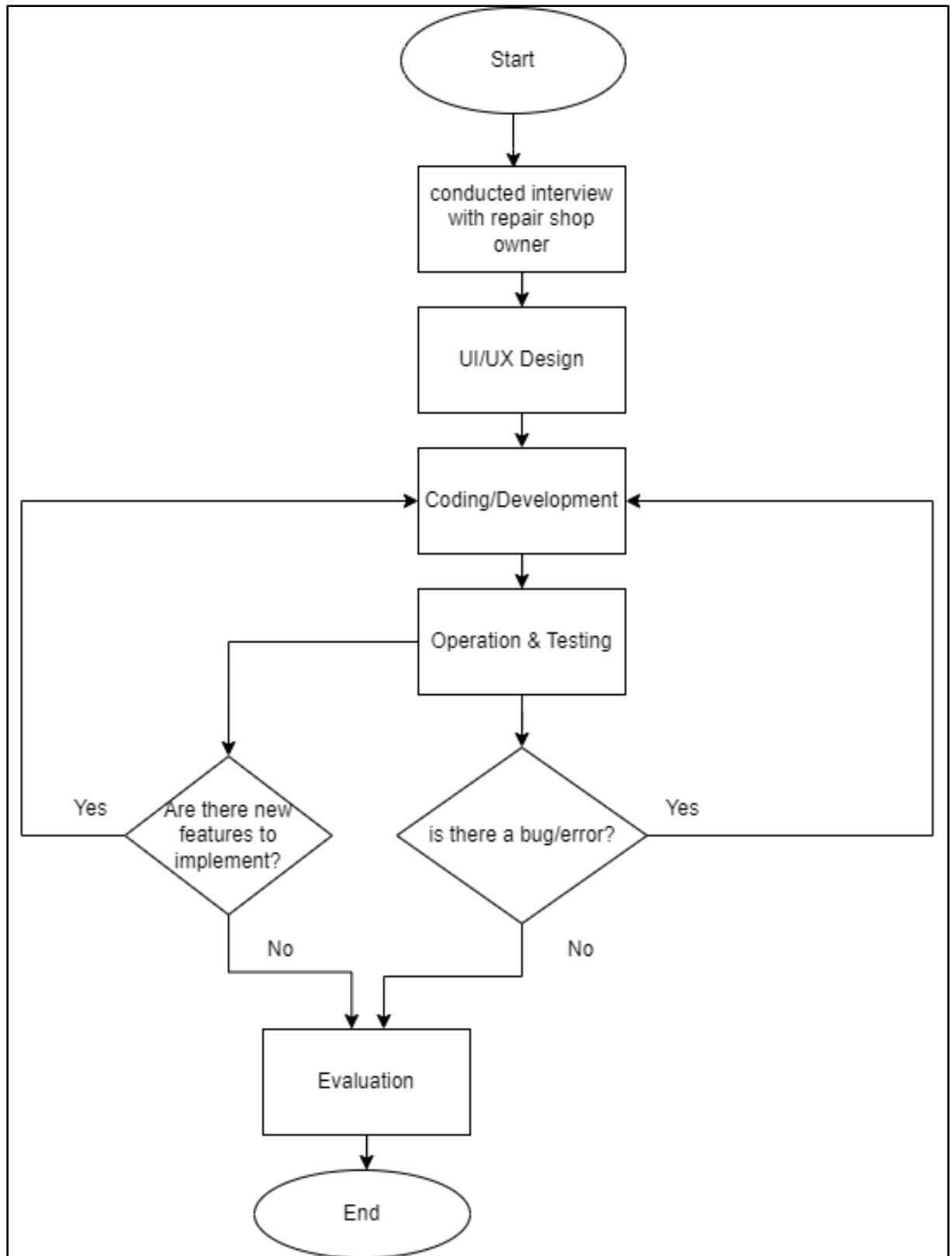
A key feature is the mechanic's access to a personalized dashboard where they can monitor and update the status of the ongoing repair. The mechanic has control over the manipulation of the status, ensuring effective communication and tracking throughout the process. This structured flow aims to streamline the customer request, admin approval, and mechanic assignment processes, providing clarity and efficiency in the system's operation.





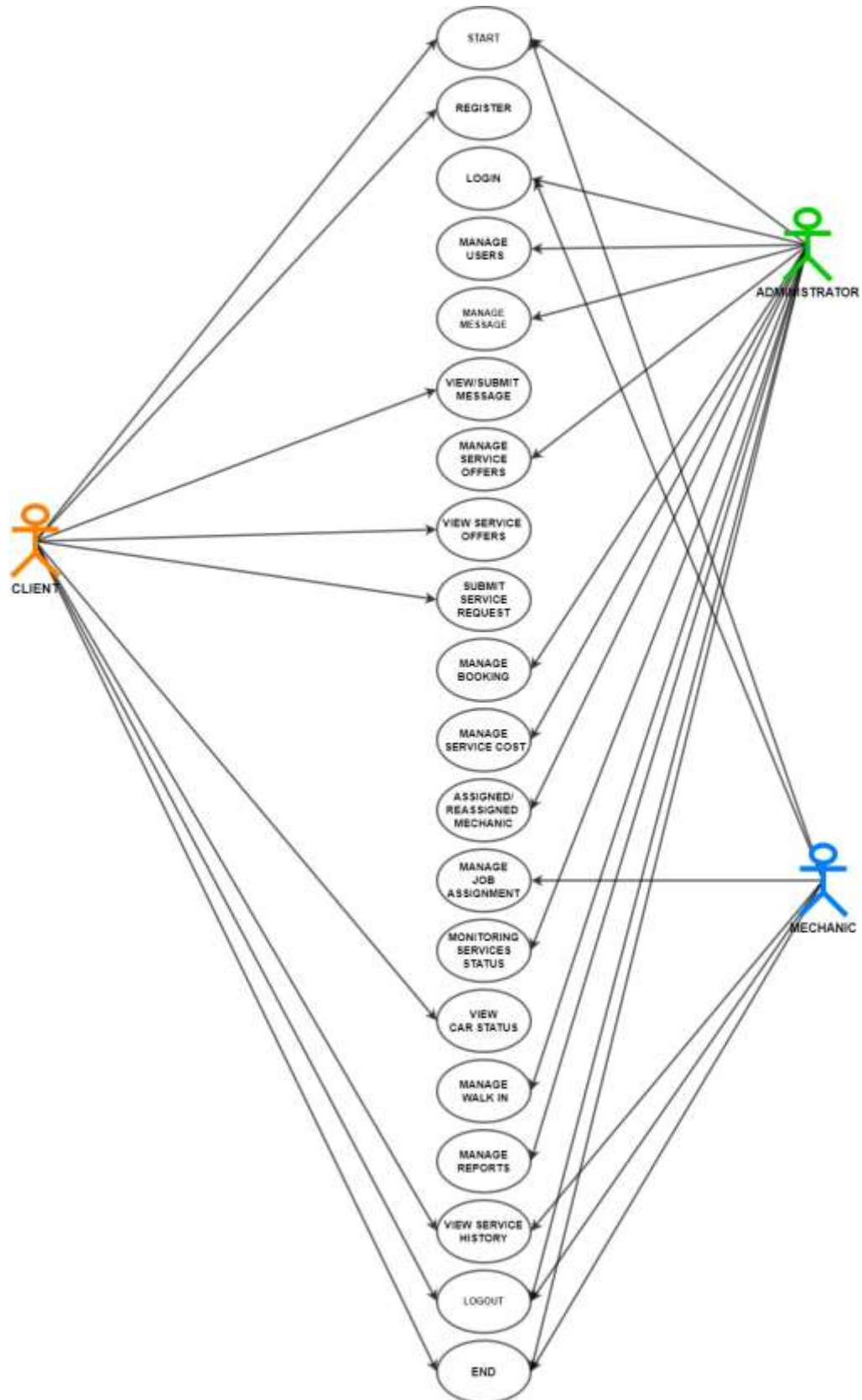
**Figure 4.** Entity Relationship Diagram

The entity relationship diagram of the system shown in Figure 4 shows the relationship between the entities within the database.



**Figure 5.** *Project Development Flowchart*

Figure 5 illustrates a project development flowchart, displaying the step-by-step process of developing a project from start to finish. It specifies the stages, tasks, and interactions between different parts of the project, providing a clear visual guide for everyone involved in its implementation.



**Figure 6.** VRMMS Use Case Diagram

Figure 6 displays the use case diagram of the vrmms system. It consists of the main processes that the client can access, such as Register/Login, Manage Account, View Services Offered, Submit Service Request, View Service Cost, and View Service History. Unregistered Client Use Case Diagram provides features including registration, viewing services offered, and company profiles. For the mechanic side, which indicates the primary procedures required for mechanics. These include logging in, managing their accounts, and managing job assignments.

And for the Administrator side, it displays the primary processes of system administration. The fundamental role of the administrator is to monitor all system functions. This consists of operations including managing accounts, managing registered users, mechanics, and creating another administrator for the system; managing messages; managing services offered; managing client booking; managing service costs; managing walk-ins in the shop; as well as generating reports.

## **Project Development**

A web-based vehicle repair and maintenance management system built using agile methodology provides a dynamic and efficient way to manage automotive services. Figure 7 shows the Agile Software Development Model that will be followed during the system's development to achieve the intended result.



**Figure 7.** *Agile Software Development Model*

**Analyze.** Researchers identify the potential problems that the system may resolve, identifying the end-users and the purpose of the system.

**Design.** During this phase, the researchers plan one of the most important parts of the system's development, from creating the diagram and how it flows to designing the system's interfaces and specifying how different components will interact with each other in the system.

**Development.** This phase includes the actual creation and subsequent coding of the system in accordance with the design specifications.

**Testing.** The system undergoes various tests to identify any issues and errors and to debug it before proceeding to deployment to ensure it functions as intended and meets the requirements.

**Evaluation.** The last phase involves reviewing and assessing the system to prove that it meets the targeted outcomes and functions properly in a real-world setting. The researchers conducted an evaluation of the system to determine the modifications and enhancements needed for system improvement.

### Operation and Testing Procedure

Operation and testing procedures were showed to establish the accurateness and reliability of the established structure using ISO 25010 mainly as functionality, usability, security, and reliability. The following procedures were undertaken to operate the system.

**Table 1:** Operation and Testing Procedure

Test for Criteria	Steps Taken	Expected Output
1. Functionality	1. Browse the Management System for Vehicle Repair and Maintenance. a. Log In b. Register	Users can view log in forms for those who have already an account. New user can be able to register to have their own account.
	2. Manage Clients Service Request a. Click book now. b. Access registration c. Log in. d. Set appointment. e. View appointments	Book service needed.

	3. Logged in as Administrator. a. Browse the Management System for Vehicle Repair and Maintenance. b. Enter Username and password	View Admin dashboard Manage service requests. View service history. Manage employed mechanics.
	4. Logged in as Mechanic. a. Browse the Management System for Vehicle Repair and Maintenance. b. Enter Username and Password	View mechanic Dashboard View only pending and new added jobs. Manage job status
	5. Logged in as Client a. Browse the Management System for Vehicle Repair and Maintenance. b. Enter Username and Password c. Overview billing statement	View Client Dashboard View Service offer Able to book appointment for service. Able to View billing statement. Able to communicate within the system with the admin
	6. Manage registered user. a. Select registered client. b. Edit information. c. Oversee the registered users	Can delete old accounts, edit, or update information and view current number of registered clients.
	7. Manage Service Offer a. Define Offers b. Input service offers. c. Monitor service offers	Able to add, delete or update service that is being shown to the clients.
	8. Manage Booking a. Check pending appointments	Able to display currents pending or finishing job.
	9. Manage issuance of Billing Statement	Able to display billing statement.
	10. Manage Mechanic a. See details of each mechanic b. Check current available mechanic. c. Assign job. d. Update current job status	Able to see information about the current employed mechanics and assign job to their respective accounts.
	11. Manage Messages a. Open client message b. Send reply to the client	Able to respond to the costumer message within the system.
	12. Manage Service History a. Click service history.	Able to see again past services that has been done.



	b. Access service history c. Browse former service record	
	13. Log in as Client. Submit Service Request a. Click book now. b. Fill in the necessary details. c. Select desired schedule	Able to book a service.
	14. Send Message a. Click message box. b. Send message	Able to send message to the admin through the message box.
	15. View History a. Click service history. b. View service history	Able to store and display past transaction of services.
	16. Mechanic Service Status a. Click status of the service	Able to determine the status of the service and that will be reflected to the client.
	17. Job Assignment a. Open new jobs b. Access current jobs c. Foresee finish job	Able to access assigned job from the admin.

2. Usability	The system can be easily learned, understood, and worked with. Carefully design to easily navigate their desired action within the system.	
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3. Security	1. Perform security checks. a. Password protection. b. Data encryption.	1. User accounts are protected with strong password policies. 2. Sensitive data is encrypted during transmission and storage.
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4. Reliability	Conduct reliability tests. a. System uptime. b. Error handling.	1. The system maintains a high uptime with minimal downtime. 2. Errors are properly handled with appropriate messages and logging.
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## **Evaluation Procedure**

The developed platform was assessed based on ISO 25010 quality models standards. The evaluation was done by professional members from the TUP-Manila community. They were selected using the purposive sampling technique. The respondents assessed the platform in terms of its functionality, usability, security, and reliability.

These The following steps were the procedures used to check the performance and execution of the web application.

**Functional Testing** was employed to test the capabilities of the web application functioning. This was done to guarantee that each feature functions properly. The processes that were followed that tested functionality of the web-based application are as follows:

1. Determined the purpose of each feature.
2. Created input data in accordance with the feature's specifications.
3. Examined the outputs of the selected feature.
4. Performed the test case scenarios.
5. Evaluated the test results from the expected results.
6. Checked the test results to see if it passed or failed.

**Usability Testing** was a test carried out to see the functionality of the web-based application. If it suits the intended user and able to be carried out its target job. In testing the application, the following were carried out:

1. clients can control whether the project is appropriate for their requirements by using it.

2. Users with specific goals can apply the system to absorb by what method to use the program successfully, competently, unhazardous, and satisfactorily within a certain usage environment.
3. The system suggestions structures that make it simple to practice and accomplish.
4. The system itself guards against user mistakes.
5. The user may engage with the system in an enjoyable and fulfilling way because of its user interface.
6. People with a broad spectrum of traits and talents may utilize the system to accomplish a given task within a given use environment.

**Security Testing** was employed to test the capabilities and functionality of the web application functioning. This was done to ensure that every feature operates as intended.

The following procedures were used to test the web-based application's security:

1. Authentication Testing to guarantee that individual legal clients can access the system.
2. Authorization Testing to verify that users have access only to the functionalities and data are permitted to use.
3. Data encryption testing to ensure the sensitive data is protected during transmission and storage.
4. Input Validation testing to prevent injection or viruses attacks and ensure that the system properly handles user inputs.
5. Vulnerability scanning testing to identify and fix any potential security weaknesses in the application.

**Reliability testing** was employed to test the usability and security of the web application functioning. This was done to guarantee that each feature functions properly. The processes that were followed that tested reliability of the web-based application are as follows:

1. Load testing to process the web application to simulated loads to assess its response and performance under normal and peak usage conditions.
2. Stress testing to push the system beyond its normal operational limits to identify any weaknesses or potential points of failure.
3. Security testing to evaluate the system's resilience against security threats and vulnerabilities.
4. Error handling testing to verify that the web application ease to handles errors and exceptions without compromising its usability or security.

**The indicators were measured using a 4 – point Likert Scale.**

The evaluation procedure consisted of the following:

1. Presented the project to the respondents who are availing service repair or maintenance to any vehicle workshop.
2. Discussed the content of the project.
3. Allowed the respondents to use the platform.
4. Gave questionnaires / evaluation instruments to the respondents.
5. Recorded feedback from the respondents.
6. Computed the results.
7. Analyzed and interpreted the results.

Table 2 shows the 4-point Likert Scale and Table 3 shows the scale range and the corresponding interpretation.

**Table 2:** Likert Scale

<b>Numerical Rating</b>	<b>Description</b>
<b>4</b>	High Acceptable
<b>3</b>	Acceptable
<b>2</b>	Fairly Acceptable
<b>1</b>	Not Acceptable

**Table 3:** Qualitative Interpretation of the Mean Table

<b>Range</b>	<b>Description</b>
<b>3.50 – 4.00</b>	Highly Acceptable
<b>2.51 – 3.50</b>	Acceptable
<b>1.51 – 2.50</b>	Fairly Acceptable
<b>1.00 – 1.50</b>	Not Acceptable

**Table 4:** Design Criteria using ISO 25010 Model

<b>Design Criteria</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Functionality</b>				
1. Functional Completeness				
2. Functional Correctness				
3. Functional Appropriateness				
<b>Usability</b>				
1. Appropriateness				
2. Learnability				
3. Operability				

4. User Interface Protection				
5. User Interface (UI) Design				
6. Accessibility				

	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Security</b>				
1. Confidentiality				
2. Integrity				
3. Non-Reputation				
4. Accountability				
5. Authenticity				
<b>Reliability</b>				
1. Faultlessness				
2. Availability				
3. Fault Tolerance				
4. Recoverability				

## Chapter 4

### RESULTS AND DISCUSSION

This chapter will include the project description, project structure, project capabilities and limitations, and project evaluation results.

#### Project Description

A Vehicle Repair and Maintenance Management System (VRRMS) was a full-featured software-based solution made to automate every step of auto maintenance and repair. It included functions such as maintenance history recording, repair scheduling, tracking, and accomplishment reports that provided an overview of the costs associated with maintenance and repairs. Through the integration of many aspects of vehicle maintenance into a single platform, VRMMS enabled businesses to attain increased productivity, enhanced security, and significant financial benefits.

#### Project Structure



*Figure 8.* Home Page

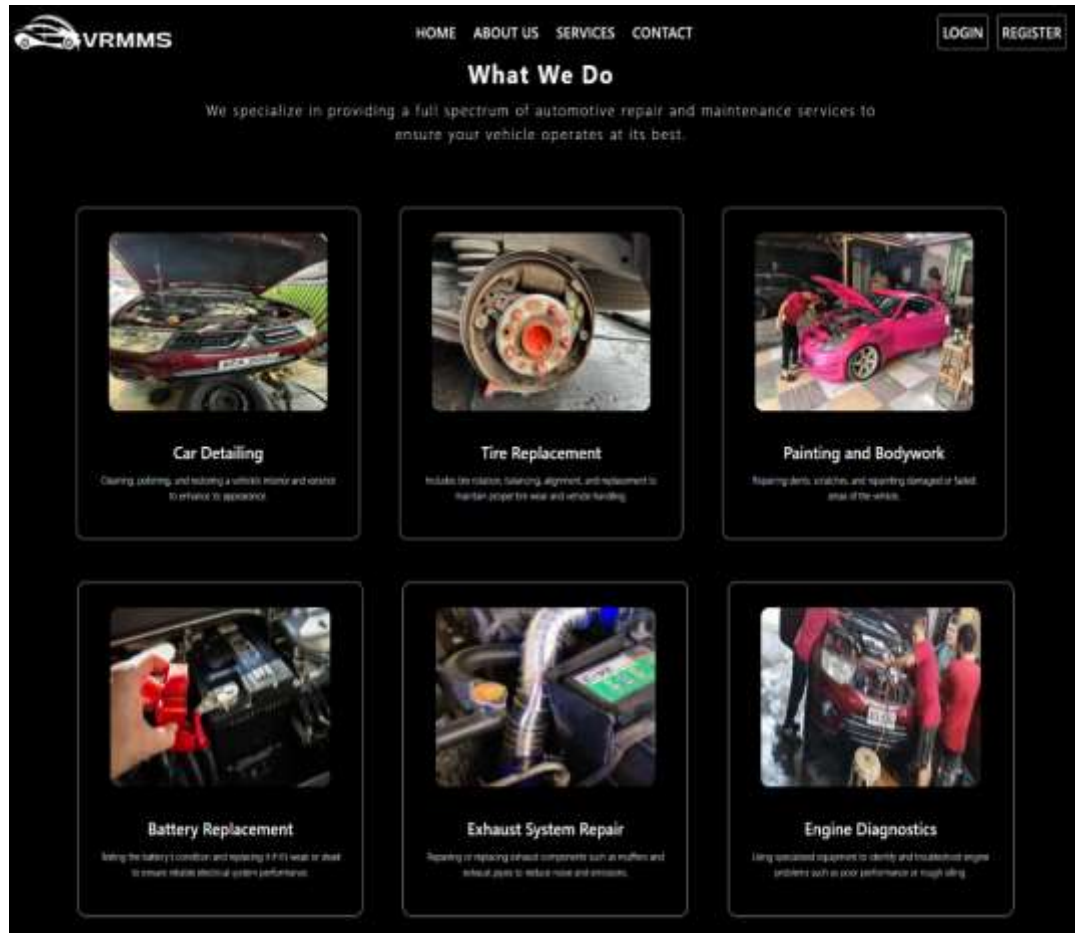
Client assumes search the name of the website, the system will display the “Home Page Module” and also view the Title System, Home, About Us, Services, Contact Module, and Login and Register button.



**Figure 9.** About Us Page

Figure 9 provides clients with a brief overview of the shop, including its objectives, mission, and background. This helps both registered and unregistered users learn more about the shop's background and principles.





**Figure 10.** Service Offer Page

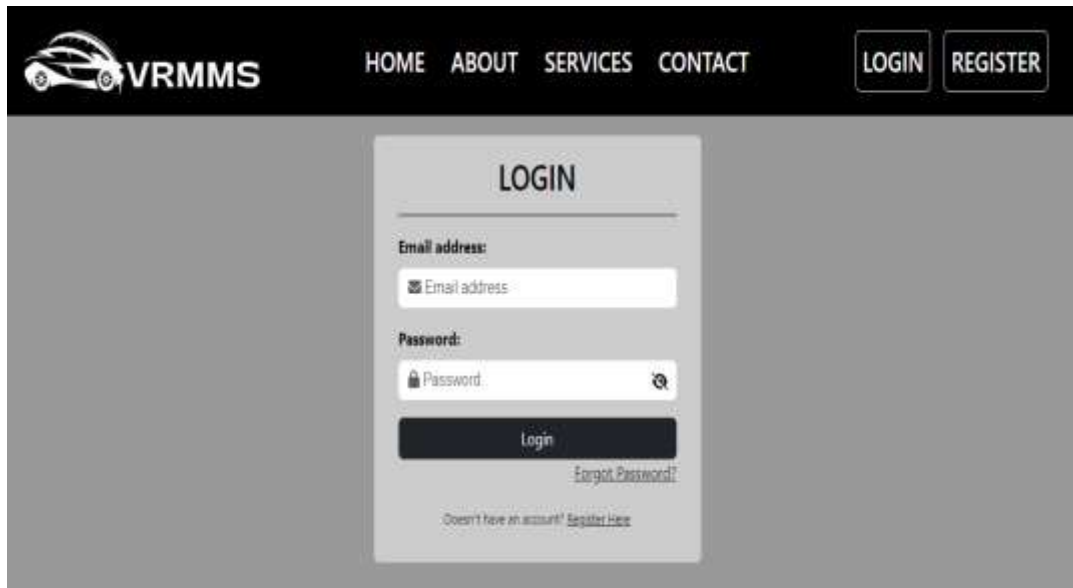
Figure 10 illustrates the “Service Offer” page, which lists the shop’s different services offered and provides detailed descriptions. This resource helps clients understand the shop’s service alternatives and make informed selections regarding their needs.



The screenshot shows the VRMMS website's contact page. At the top, there is a navigation bar with links for HOME, ABOUT US, SERVICES, and CONTACT. On the right side of the navigation bar are buttons for LOGIN and REGISTER. The main heading is "Get In Touch", followed by the text: "You can contact us with anything related to our services. We'll get in touch with you as soon as possible." Below this, there is a contact form titled "Email Us" with fields for Email, Subject, and Message, and a SEND button. To the right of the form is a photograph of a person working on a car engine. The footer contains the VRMMS logo, a mission statement, a list of services (Car Detailing, Tire Replacement, Painting and Bodywork, Battery Replacement, Exhaust System Repair), and contact information including the address (345 Vicente Cruz Sampaloc, Manila, Philippines), phone number (+63 0931 856 8056), email (vrmmsshop@gmail.com), and social media icons for Facebook, Instagram, and TikTok.

**Figure 11.** Contact Page

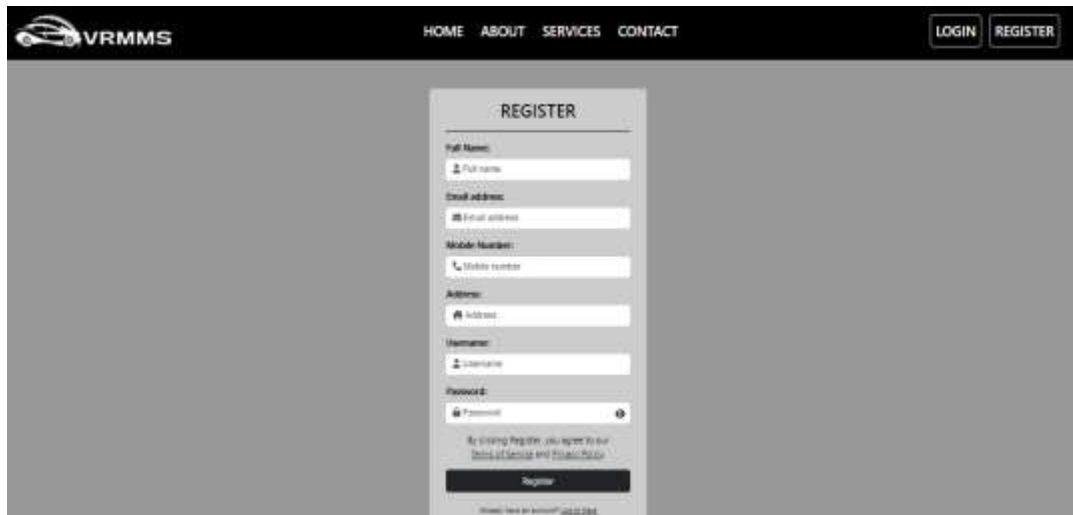
This figure offers clients with important details for reaching out the shop owner. This page demonstrates that clients that have already registered can message the owners through their prospective account. Furthermore, it displays contact information such as phone numbers, email addresses, and physical locations in the footer or lower right corner. It functions as an important communication tool, allowing users to simply contact the shop's owner with inquiries, complaints, or assistance.



The screenshot shows the VRMMS website's login interface. At the top, there is a navigation bar with the VRMMS logo on the left and links for HOME, ABOUT, SERVICES, and CONTACT in the center. On the right side of the navigation bar are two buttons: LOGIN and REGISTER. The main content area features a central login form with the title 'LOGIN'. The form includes an 'Email address:' label above a text input field, a 'Password:' label above a password input field with a toggle icon, and a 'Login' button. Below the login button is a link for 'Forgot Password?'. At the bottom of the form, there is a link that says 'Don't have an account? Register Here'.

**Figure 12.** Login Page – Client Side

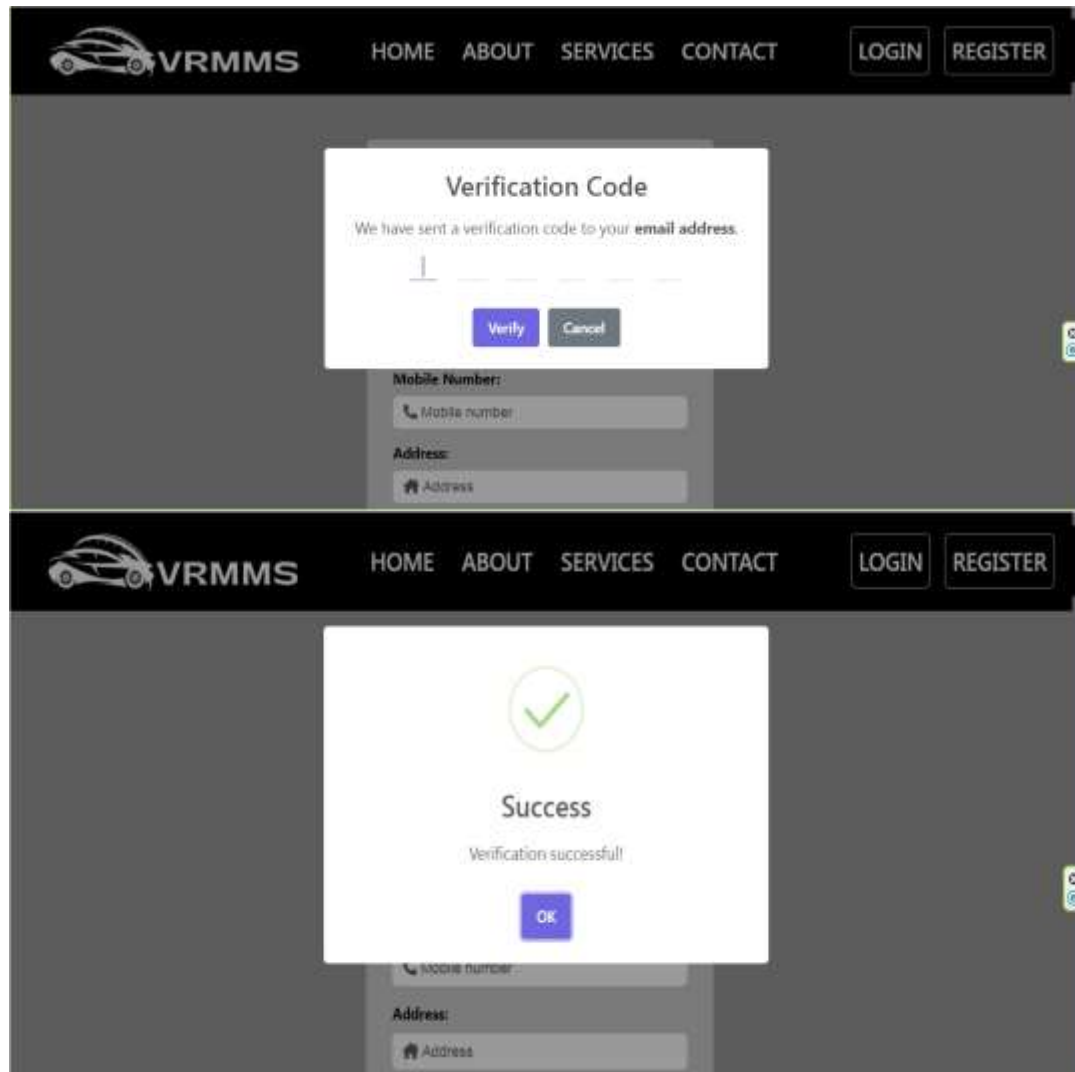
Figure 12 shows the login page from the client's side of the system. It includes the shop's address, contact information, services, forgot password and about section where clients can register and ask inquiries. Clients without accounts can create one by visiting the registration tab accessible through the upper right icon.



The screenshot shows the VRMMS website's registration interface. The layout is identical to the login page, with the same navigation bar and logo. The central form is titled 'REGISTER'. It contains several input fields: 'Full Name', 'Email address', 'Mobile Number', 'Address', 'Username', and 'Password'. Each field has a corresponding icon (person, envelope, phone, location pin, and key) to its left. Below the password field is a checkbox for 'By clicking Register, you agree to our Terms of Service and Privacy Policy'. At the bottom of the form is a 'Register' button. A small copyright notice is visible at the very bottom of the page.

**Figure 13.** Registration Page – Client Side

Figure 13 shows the UI of the Registration page in which the user will use to create their account for them to be able to login to set an appointment. The Registration page mainly display name, email address, mobile number, address, username, and password.



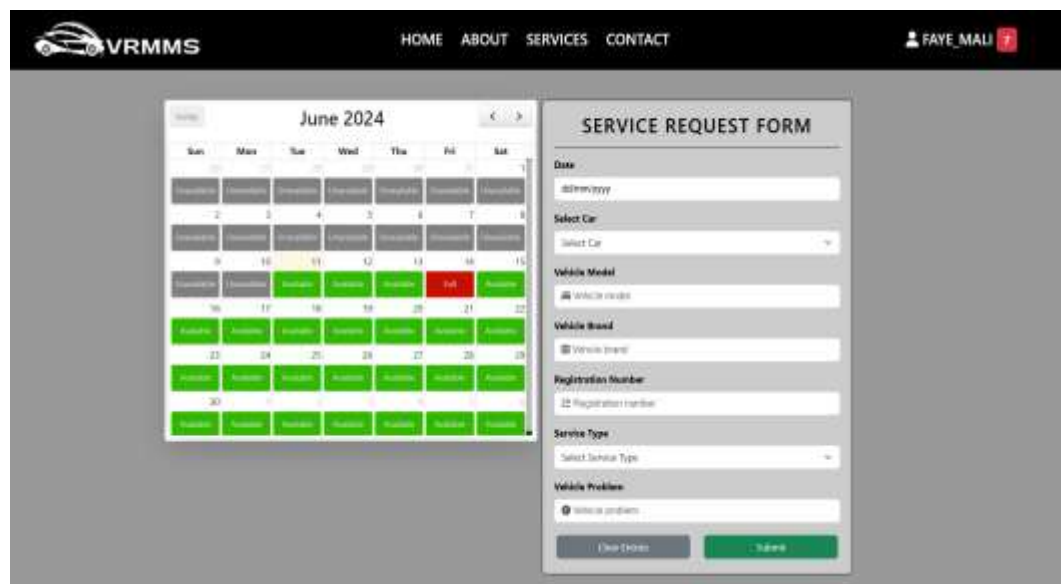
**Figure 14.** Verification Code – Client Side

The six-digit verification number in this figure will be directed to the email address that the clients has provided. The code is only going to be accessible for five minutes, and it should be finished. The six-digit code is no longer usable for verification if the user is unable to utilize it within five minutes.



**Figure 15.** My Vehicle Profile – Client Side

Figure 15 shows the registered vehicle by the client, this includes the vehicle model, vehicle brand and its registration number. If the client has multiple cars, s(he) can register it inside the system and then use it when s(he) is booking a specific service.

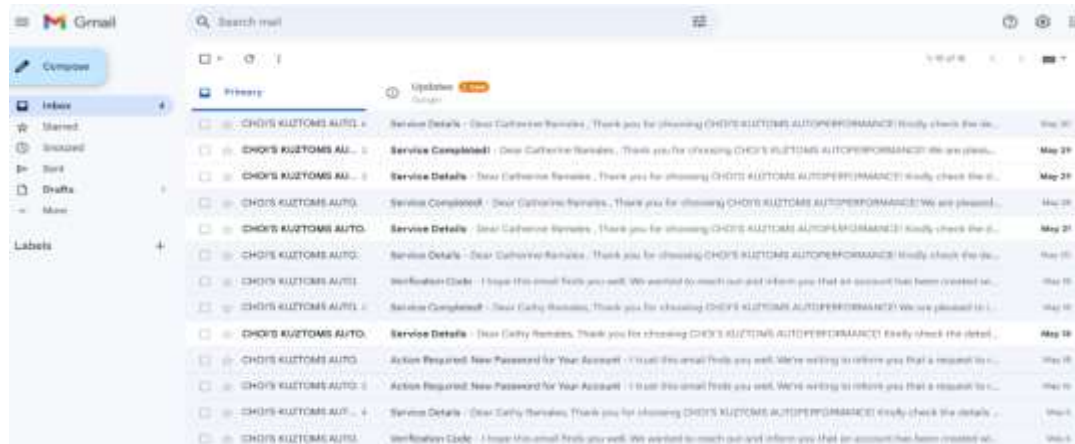


The screenshot shows the 'SERVICE REQUEST FORM' on the VRMMS website. A modal dialog box is centered on the screen, asking the user: "Are you sure you want to schedule a request?" Below this question, it states "You won't be able to reschedule this!" and provides two buttons: "Yes, schedule it" (blue) and "No, cancel" (red). In the background, a calendar for June 2024 is visible, and the form itself has fields for "Service Type" (set to "Engine Diagnostics") and "Vehicle Problem" (set to "CHECK-UP IS POSSIBLE, TIL FOR US").

**Figure 16.** Service Request Form – Client Side

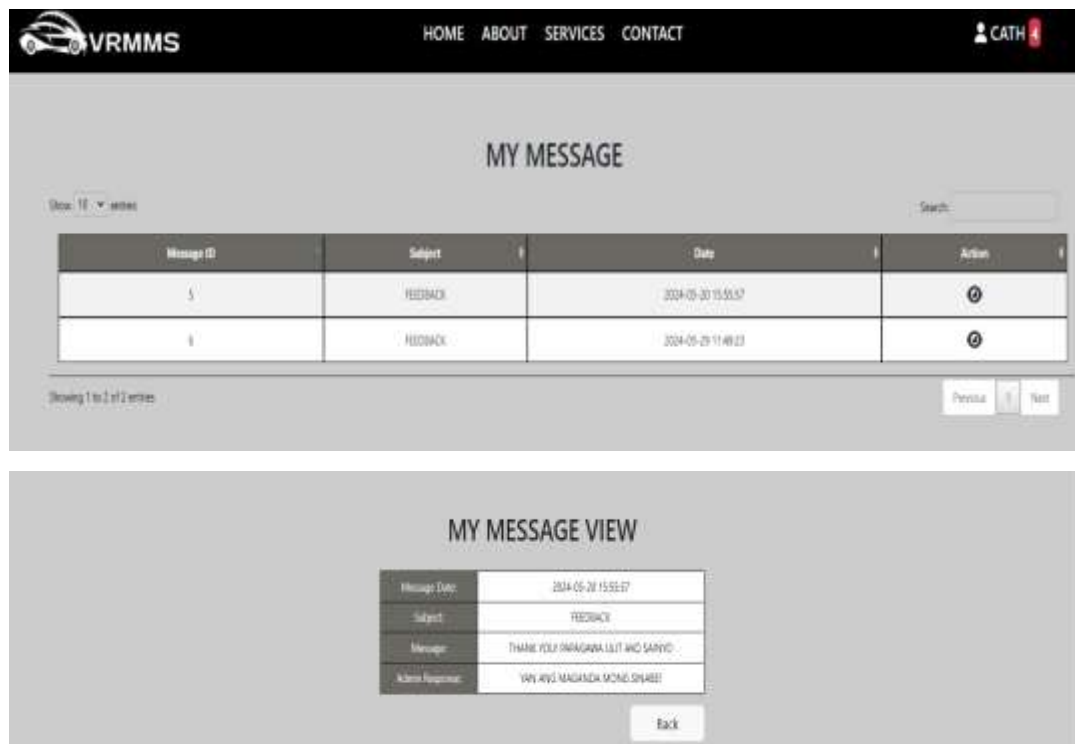
Clients must register first and log in after creating an account in order to make an appointment. The client must include s(he) desired date, choose the car from the list of car they registered (refer to figure 15), and service type when filling up the form. Furthermore, once the client fills out all the provided information and clicks the submit button, s(he) will be asked for verification to either continue with the booking request or cancel it.





**Figure 17.** Account & Email Notification – Client Side

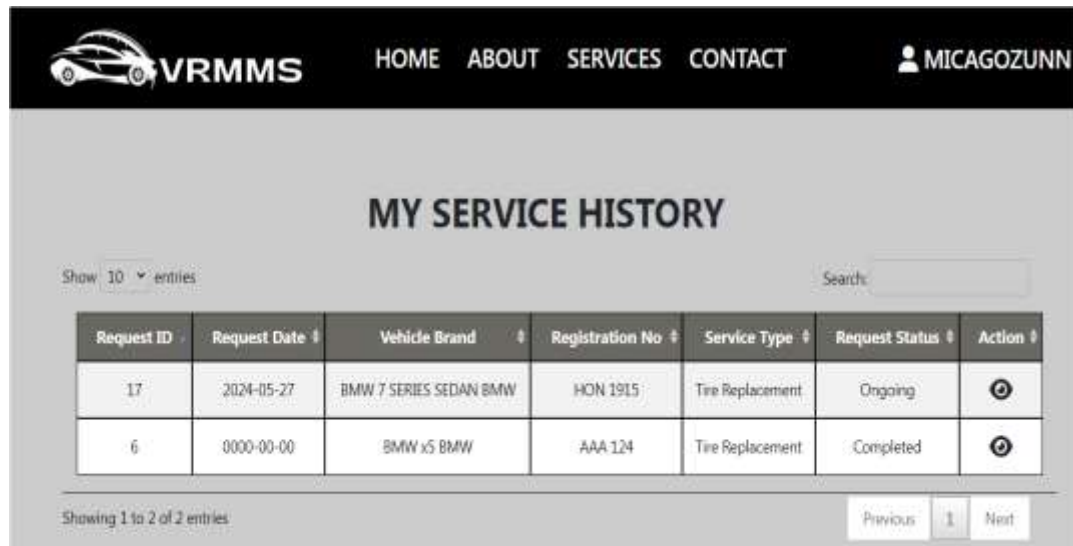
This figure illustrates those clients with an account and booked services receive notification about the status of their requests. Additionally, they can receive notifications via their email addresses, ensure timely updates.



**Figure 18.** Message Page – Client Side



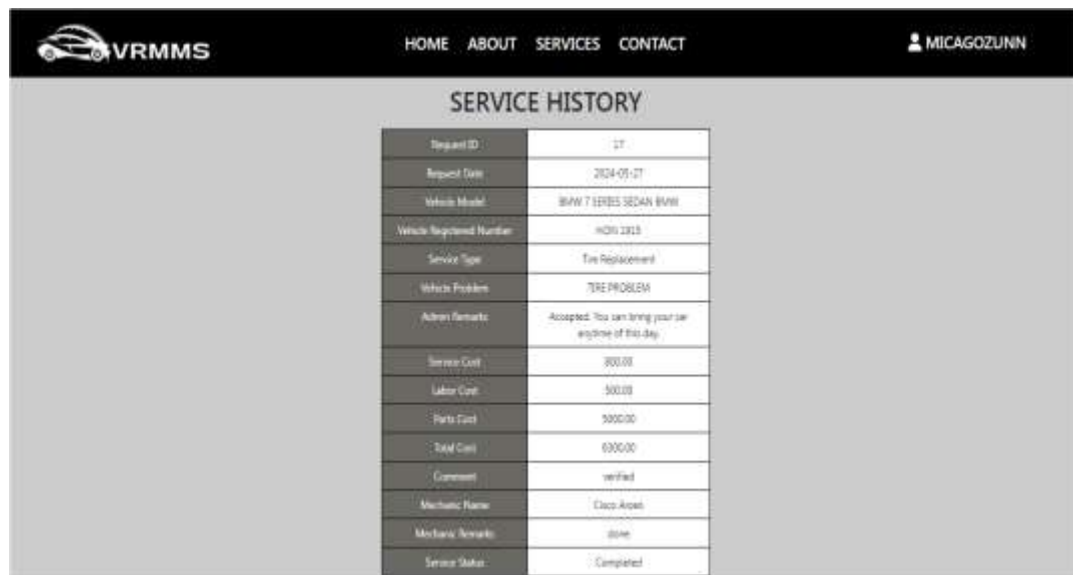
This figure allows clients to access and view their messages, facilitating communication between clients and the shop owner.



Request ID	Request Date	Vehicle Brand	Registration No	Service Type	Request Status	Action
17	2024-05-27	BMW 7 SERIES SEDAN BMW	HON 1915	Tire Replacement	Ongoing	
6	0000-00-00	BMW x5 BMW	AAA 124	Tire Replacement	Completed	

Showing 1 to 2 of 2 entries

Previous 1 Next

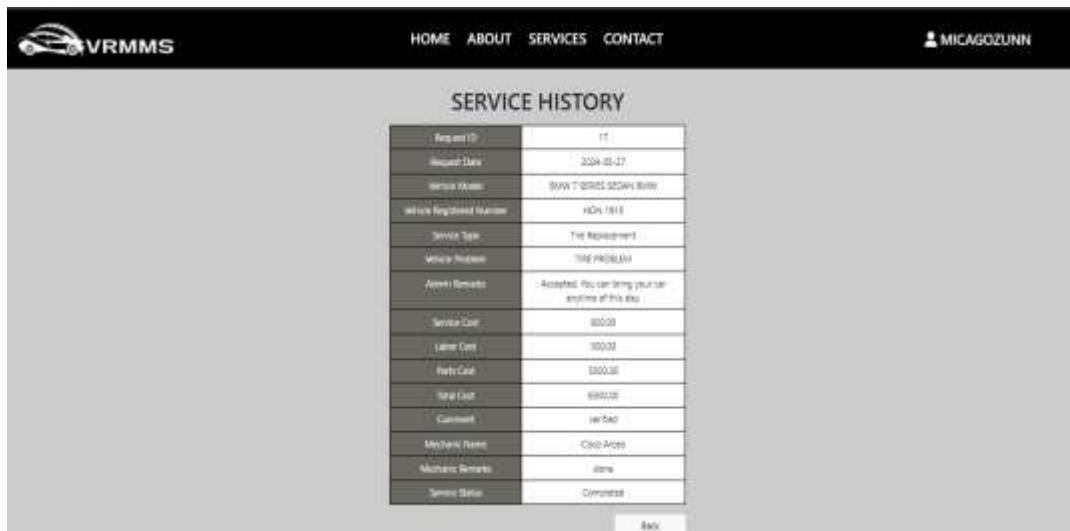


Request ID	Request Date	Vehicle Model	Vehicle Registered Number	Service Type	Vehicle Problem	Admin Remarks	Service Cost	Labor Cost	Parts Cost	Total Cost	Comment	Mechanic Name	Mechanic Remarks	Service Status
17	2024-05-27	BMW 7 SERIES SEDAN BMW	HON 1915	Tire Replacement	TIRE PROBLEM	Accepted: You can bring your car anytime of this day	900.00	500.00	5000.00	6000.00	verified	Clase Aron	done	Completed

**Figure 19.** Service History – Client Side

The client's history, whether it is ongoing, in progress, or completed, will be shown in this figure. Along with the client's request ID, the request's status, and the administrator's notes about the confirmation are also included. The client can use this option to verify his/her their vehicle repair history and keep an eye on his/her cars.





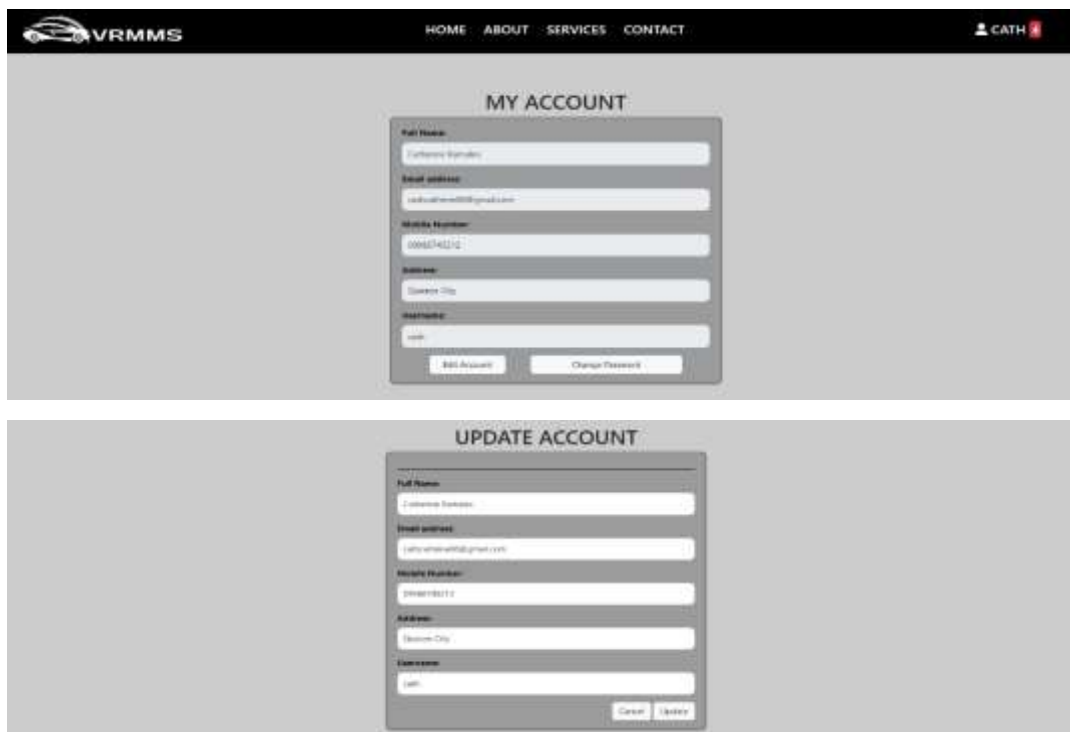
The screenshot shows the VRMMS website with a navigation bar (HOME, ABOUT, SERVICES, CONTACT) and a user profile (MICAGOZUNN). The main content area is titled "SERVICE HISTORY" and displays a table with the following data:

Request ID	11
Request Date	2024-03-27
Service Order	BOWN T 2024S 25254S 4076
Vehicle Registered Number	HDN 1818
Service Type	Tire Replacement
Vehicle Problem	TIRE PROBLEM
Approved Remarks	Accepted. You can bring your car anytime at this day.
Service Cost	\$00.00
Labor Cost	\$00.00
Parts Cost	\$000.00
Total Cost	\$000.00
Comment	car Safe
Mechanic Name	Chris Arce
Mechanic Remarks	none
Service Station	Completed

A "Back" button is located at the bottom right of the table.

**Figure 20.** Initial Cost Payment – Client Side

The shop will provide a breakdown of the initial cost payment to clients. Please note that the initial cost is subject to change based solely on the type of service provided; the owner will only notify the client of any changes at that point.



The top screenshot shows the "MY ACCOUNT" page with the following fields:

- Full Name: [Text Field]
- Confirm Name: [Text Field]
- Email address: [Text Field]
- Mobile Number: [Text Field]
- Address: [Text Field]
- City: [Text Field]
- State: [Text Field]
- Zip: [Text Field]

Buttons: "Edit Account", "Change Password".

The bottom screenshot shows the "UPDATE ACCOUNT" page with the following fields:

- Full Name: [Text Field]
- Confirm Name: [Text Field]
- Email address: [Text Field]
- Mobile Number: [Text Field]
- Address: [Text Field]
- City: [Text Field]
- State: [Text Field]
- Zip: [Text Field]

Buttons: "Cancel", "Update".

MY ACCOUNT

Old Password:

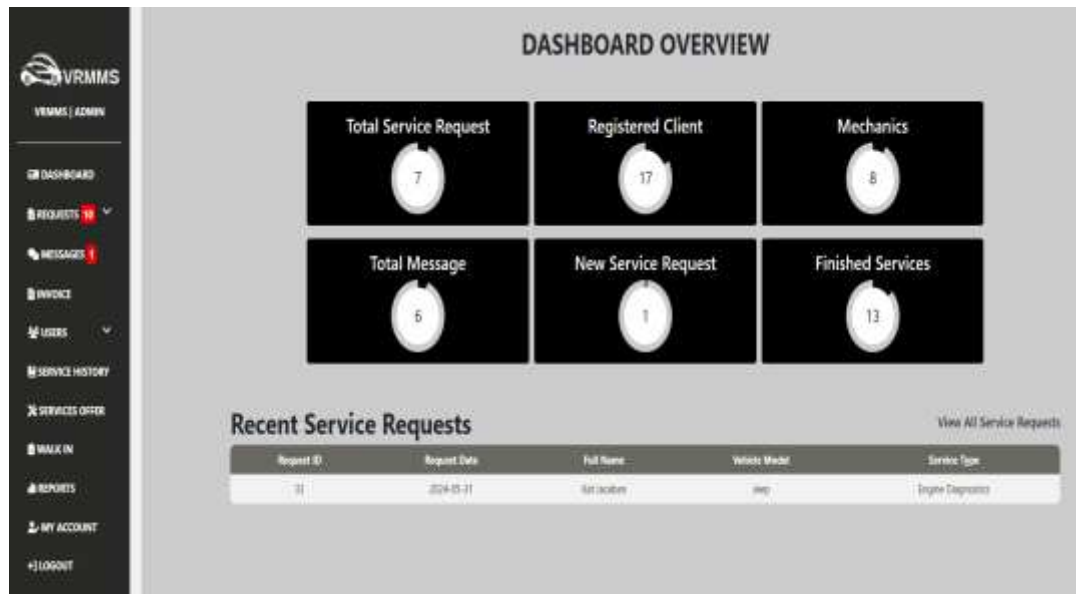
New Password:

Confirm New Password:

Cancel Update

**Figure 21.** Account Page – Client Side

Clients can access and update their account, as well as change their password.



**Figure 22.** Dashboard Overview – Admin Side

Only the admin side will have access to this dashboard overview. It contains the entire service request, the client who has registered, the mechanics, the new service request, and the completed services. Additional features can be noticed in the left corner of the displayed area.

Request ID	Request Date	Full Name	Vehicle Brand	Service Type	Status	Action
11	2024-05-28	Dyle Top/Sanchad	Jeonux Toyota	Wheel Alignment	Pending	
18	2024-05-28	Catherine Raposo	Honda SUV	Washon Repair	Pending	
25	2024-05-28	Kile Astar	Mitsubishi Mirage	Wheel Balancing	Pending	
26	2024-05-28	Faye Makoon	Pajero 2020 Ford	Exhaust System Repair	Pending	

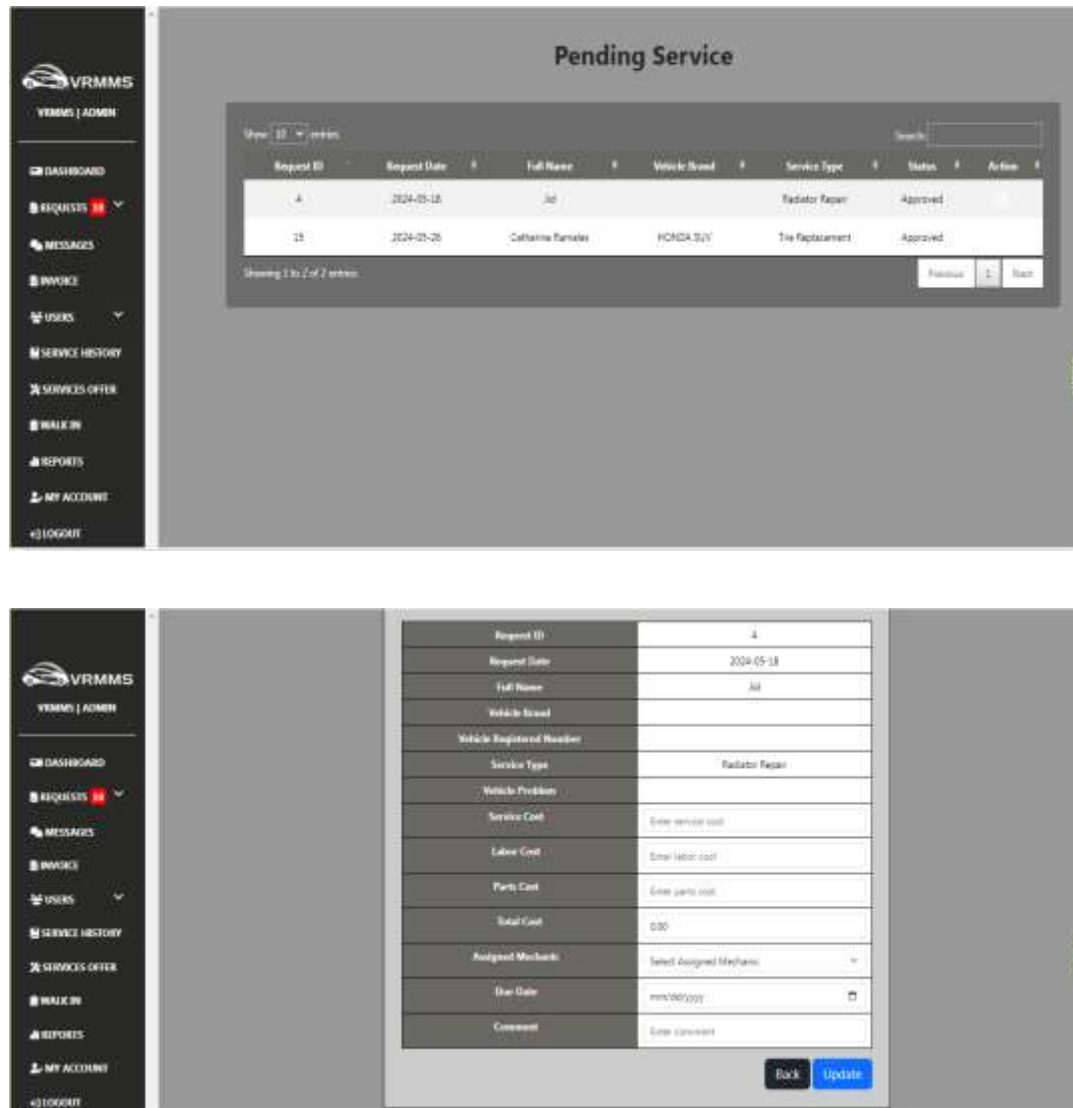
Showing 1 to 4 of 4 entries

Request ID	11
Request Date	2024-05-31
Full Name	Kil Ibrahim
Vehicle Brand	Jeep Gladiator
Vehicle Registration Number	340
Service Type	Engine Diagnostics
Vehicle Problem	oil repair my car
Remarks	oil recently done

Back Cancel Save

**Figure 23.** Service Request – Admin Side

Only the service requests from every single client entry will be displayed on this side. It contains each client's approval icon, name, vehicle brand, service type, status, and request ID in addition to the request date.



**Figure 24.** Pending Service – Admin Side

The pending service from the admin side can be seen in this figure. The initial payment for the client's record can be entered by the admin. The initial cost could vary based on the user's vehicle's maintenance. The administrators and mechanics will notify the users who have made adjustments to their payment arrangements.

**Ongoing Service**

Showing 1 to 6 of 6 entries

Request ID	Request Date	Full Name	Vehicle Brand	Service Type	Status	Action
3	2024-05-25	John Carl A. Enemio	107th design charger dodge	Painting and Bodywork	Ongoing	<a href="#">View</a>
7	2024-05-19	James Rostel Pansan	Rover Ranger Road	Tire Replacement	Ongoing	<a href="#">View</a>
16	2024-05-21	Catherine Ranzano	Mercedes S19	Painting and Bodywork	Ongoing	<a href="#">View</a>
23	2024-05-28	Alvin Aciano	Mitsubishi Pajero	Wheel Balancing	Ongoing	<a href="#">View</a>
24	2024-05-28	Yago Malabon	Rover 2020 Road	Exhaust System Repair	Ongoing	<a href="#">View</a>
28	2024-05-21	Catherine Ranzano	Mercedes C180	Car Detailing	Ongoing	<a href="#">View</a>

**Ongoing Service**

Request ID: 3

Request Date: 2024-05-25

Full Name: John Carl A. Enemio

Vehicle Brand: 107th design charger dodge

Vehicle Registered Number: D162794271

Service Type: Painting and Bodywork

Vehicle Problem: scratch and dents on the rear side of the vehicle

Service Cost: ₱6,500.00

Labor Cost: ₱500.00

Parts Cost: ₱9,000.00

Total Cost: ₱16,000.00

Assigned Mechanic: Daryl Chan

Due Date: 2024-06-05

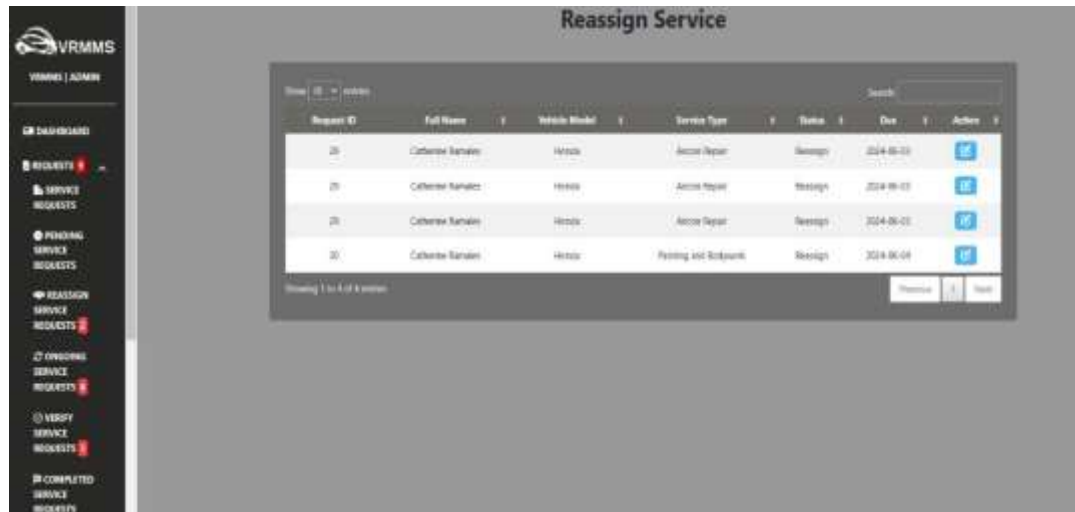
Status: Ongoing

Comment: Your car is ready for repair now.

[Back](#)

**Figure 25.** Ongoing Service – Admin Side

The shop's ongoing services will be the main concern of this function. Users that are listed on this side will only need to finish their vehicle; after they do, their dashboard will show completed services.



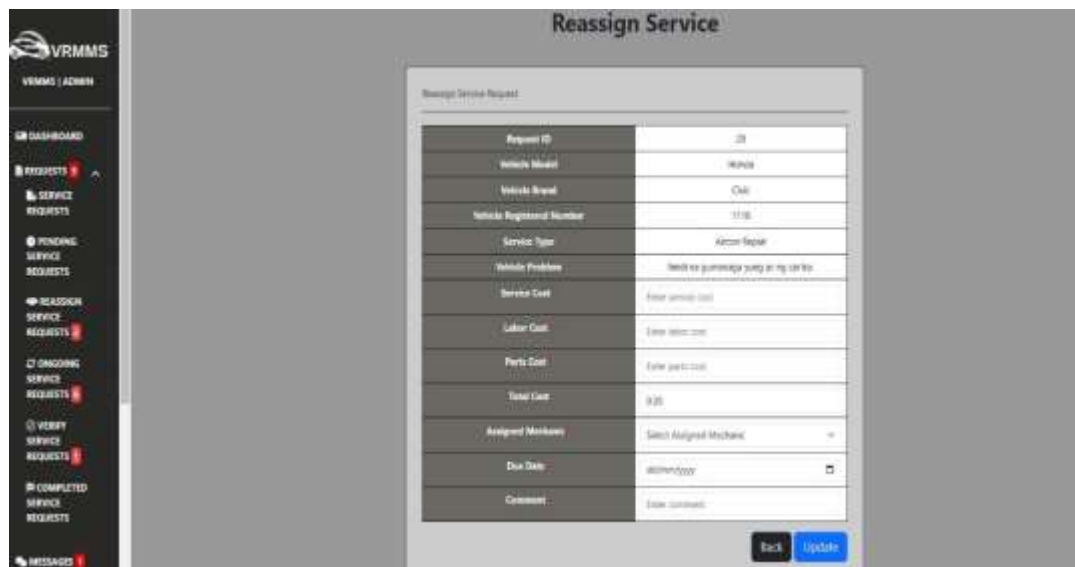
**VRMMS | ADMIN**

**Reassign Service**

Showing 1 to 4 of 4 items

Request ID	Full Name	Vehicle Model	Service Type	Status	Due	Action
28	Catherine Ramirez	Honda	Accident Repair	Reassign	2024-08-08	<a href="#">View</a>
28	Catherine Ramirez	Honda	Accident Repair	Reassign	2024-08-08	<a href="#">View</a>
28	Catherine Ramirez	Honda	Accident Repair	Reassign	2024-08-08	<a href="#">View</a>
30	Catherine Ramirez	Honda	Painting and Bodywork	Reassign	2024-08-04	<a href="#">View</a>

Previous 1 2 Next



**VRMMS | ADMIN**

**Reassign Service**

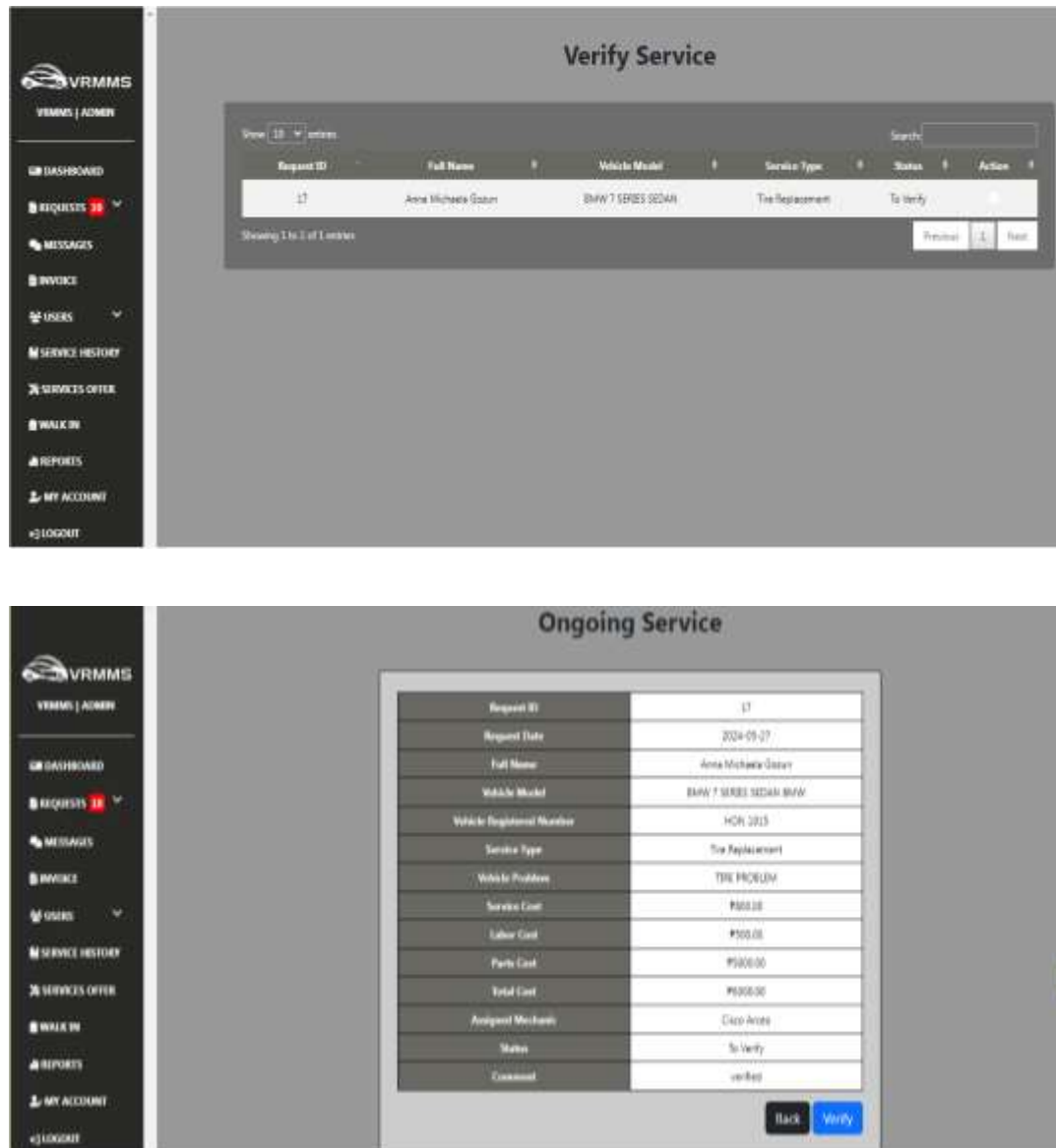
Reassign Service Request

Request ID	28
Vehicle Model	Honda
Vehicle Brand	Civic
Vehicle Registration Number	1118
Service Type	Accident Repair
Vehicle Problem	Small ice gun damage front of my car
Service Cost	Enter service cost
Labor Cost	Enter labor cost
Parts Cost	Enter parts cost
Total Cost	0.00
Assigned Mechanic	Select Assigned Mechanic
Due Date	dd/mm/yyyy
Comments	Enter comments

Back Update

**Figure 26.** Reassign Service – Admin Side

In this figure, it displays once the mechanic clicks the reassign status, it reflects in admin side. The admin can reassign the service request again into another mechanic with the same specialization/skills.



**Figure 27.** Verify Service – Admin Side

This figure shows the Verify Service on the Admin Side. The mechanics will notify the admin when the user's vehicle is finished so that the admin may notify the user. Only the admin will have access to these functions. The user will receive an email notifying his/her that his/her request has been fulfilled after the admin has verified.

Completed Service	
Request ID	6
Request Date	2024-05-20
Full Name	Anna Michela Geron
Vehicle Model	BMW x5 E55
Vehicle Registration Number	AAA 124
Service Type	Tire Replacement
Vehicle Problem	Flat tires
Service Cost	¥1200.00
Labor Cost	¥12.00
Parts Cost	¥5000.00
Total Cost	¥6212.00
Assigned Mechanic	Clara Arce
Status	Completed
Comment	please wait for the update your car is ready to repale now
Date Completed	2024-05-21



VRMMG

VRMMG | ADMIN

Dashboard

Requests 3

Messages

Invoice

Users

Service History

Services Offer

Make Me

Reports

My Account

Logout

Completed Service

State: IN Admin

Search:

Request ID	Request Date	Full Name	Vehicle Model	Service Type	Status	Action
1	2024-05-18	Anna Michela Geron	BMW x5	Oil Change	Completed	<a href="#">View</a>
5	2024-05-20	Anna Michela Geron	BMW x5	Tire Replacement	Completed	<a href="#">View</a>
6	2024-05-20	Anna Michela Geron	BMW x5	Tire Replacement	Completed	<a href="#">View</a>
8	2024-05-20	Anna Michela Geron	BMW x5	Engine Diagnostics	Completed	<a href="#">View</a>
9	2024-05-20	Anna Michela Geron	BMW x5	Battery Replacement	Completed	<a href="#">View</a>
17	2024-05-21	Anna Michela Geron	BMW x5	Tire Replacement	Completed	<a href="#">View</a>

Showing 1 to 6 of 6 entries

[Previous](#) [Next](#)

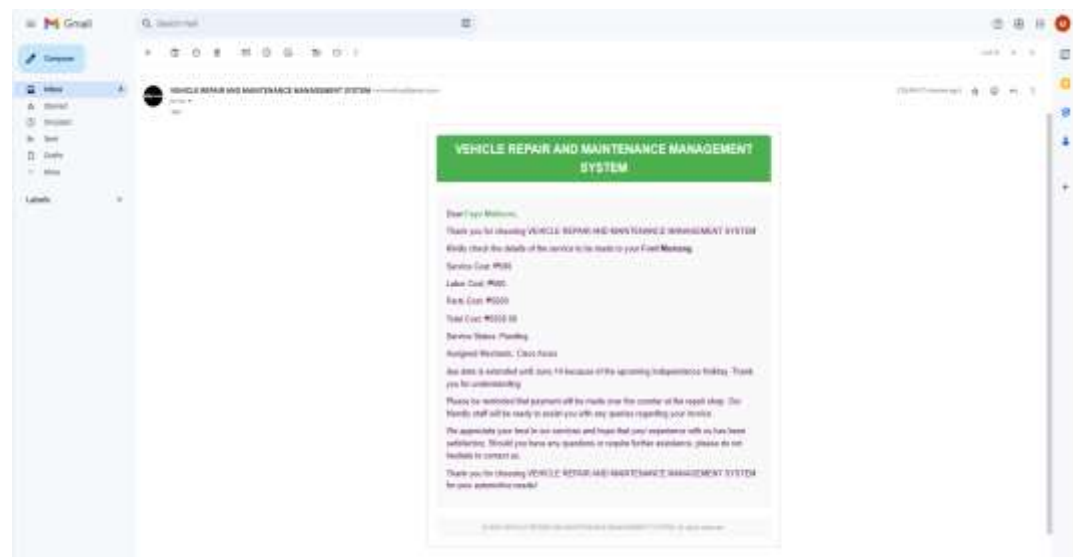
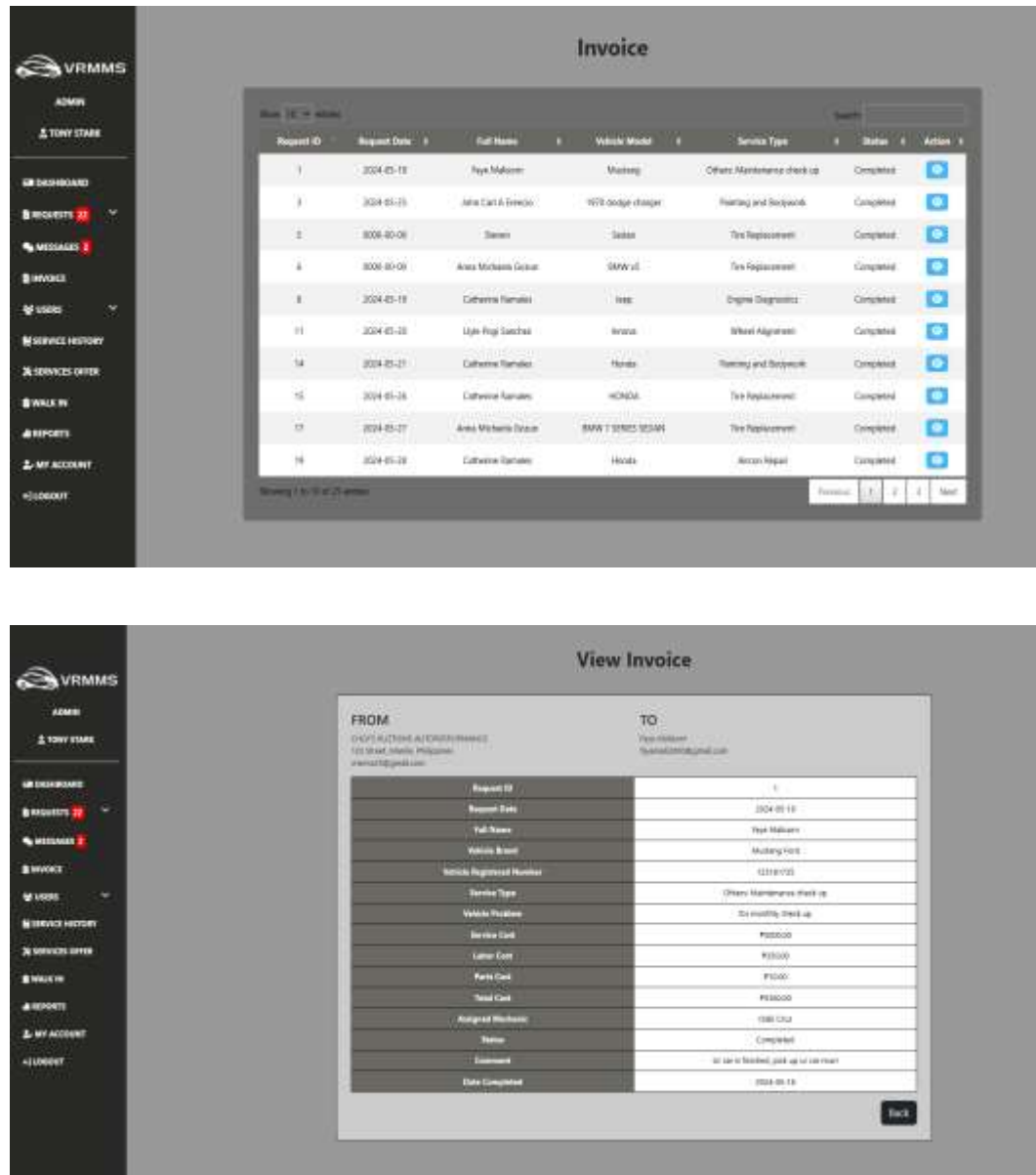


Figure 28. Completed Service – Admin Side



Complete service history from the admin side, complete with dates and information.

After the service is finished, the users will receive an email that they used to register their account. After the vehicle is finished, the users can settle their payment.



**Figure 29.** Invoice – Admin Side

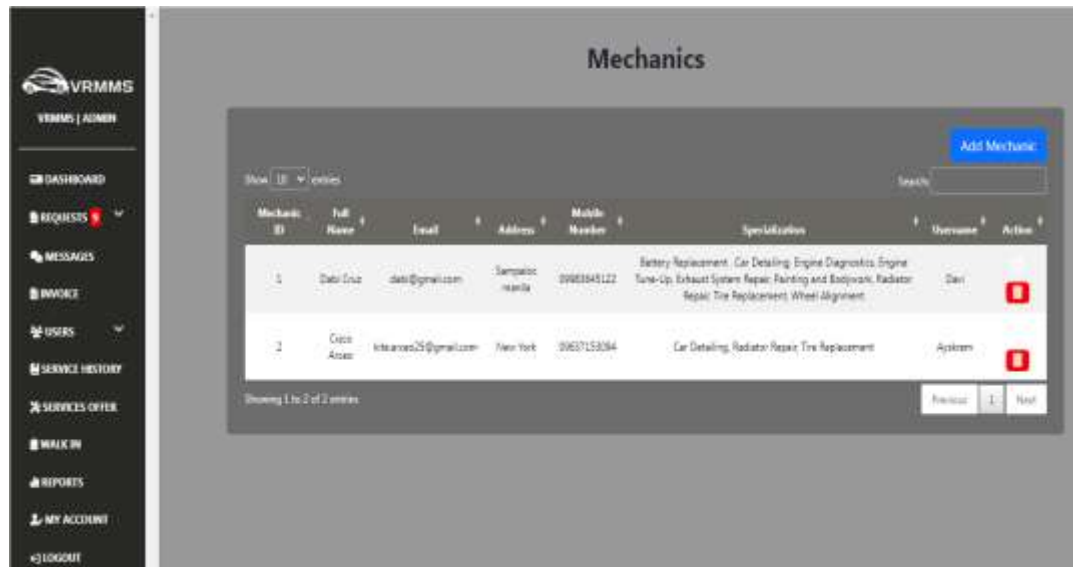
An administrative invoice that contains all labor costs as well as additional information including the request ID, date, complete name, brand, registered number,

vehicle type, service type, vehicle issue, total cost, assigned mechanic, status, and feedback from the shop.

Client ID	Full Name	Email	Mobile Number	Address	Username	Action
1	John Carl A. Erendo	johncaterendo@gmail.com	09052420254	Bigg West Avenue, Calbayog City, Samar, 6710	Carco	[Edit] [Delete]
2	Jul	crutypen713@gmail.com	09294985362	Calbayog	Jul	[Edit] [Delete]
3	Faye Maloon	fyemal2000@gmail.com	0991782087	marikina city	Faye_Mal	[Edit] [Delete]
4	Catherine Banales	cathcatherine@gmail.com	09886745212	Quezon City	cath	[Edit] [Delete]
5	Steven	magediarte-ven810@gmail.com	09559500888	277 sta catalina st.	Steve	[Edit] [Delete]
6	Anna-Michaela Gizon	mikagizon05@gmail.com	09615868260	3C, Quezon City	mikagizon	[Edit] [Delete]

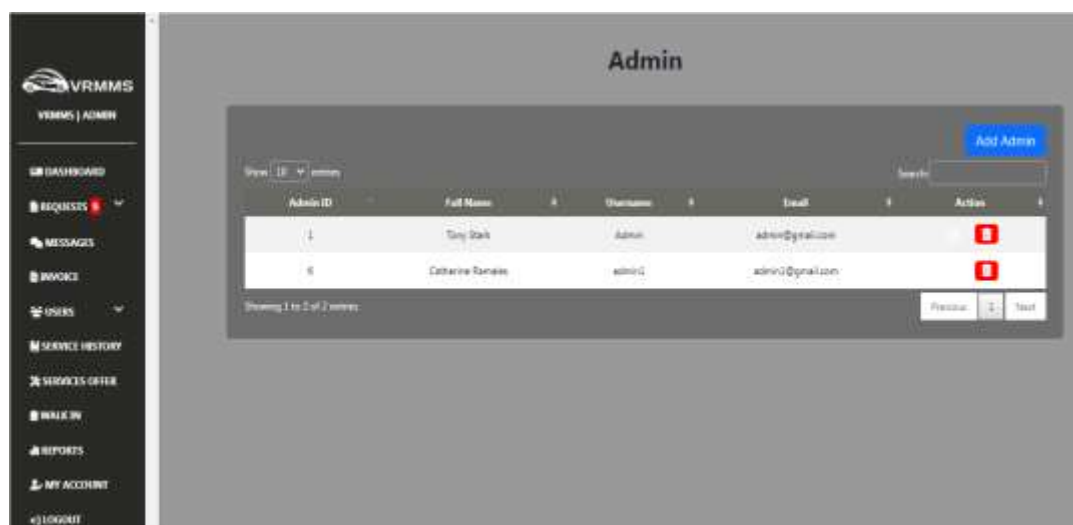
**Figure 30.** Registered Users

The Registered Users are the focus of this figure. The administrator can also access these functions, which include his/her client ID, full name, email, address, and user name, in addition to operations like deleting users or altering client information. This also involves monitoring the total number of accounts that have been registered on the website. Additionally, it stands as each user's restored history. To guarantee that user information is secure, only the administrator has access to this.



**Figure 31.** Mechanic Users

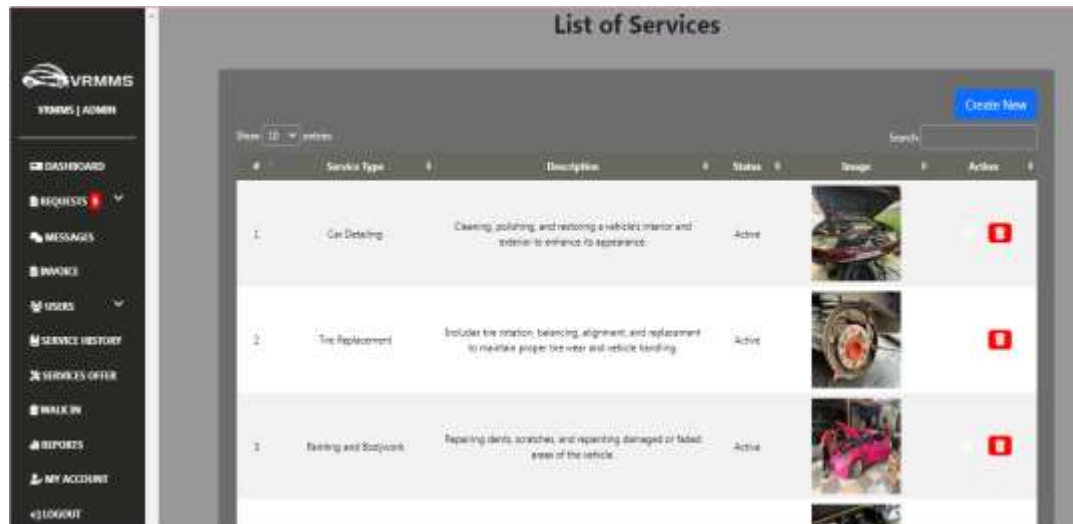
The registered mechanics are shown in the above image. The mechanics' full name, address, mechanic number, and specialization are displayed in the figure. In order to avoid work overload and overlap with one another, the administrator will only assign personnel to users based on their areas of expertise. This will also guarantee that the mechanic is the best fit for the problems with the users' vehicles.



**Figure 32.** Admin User

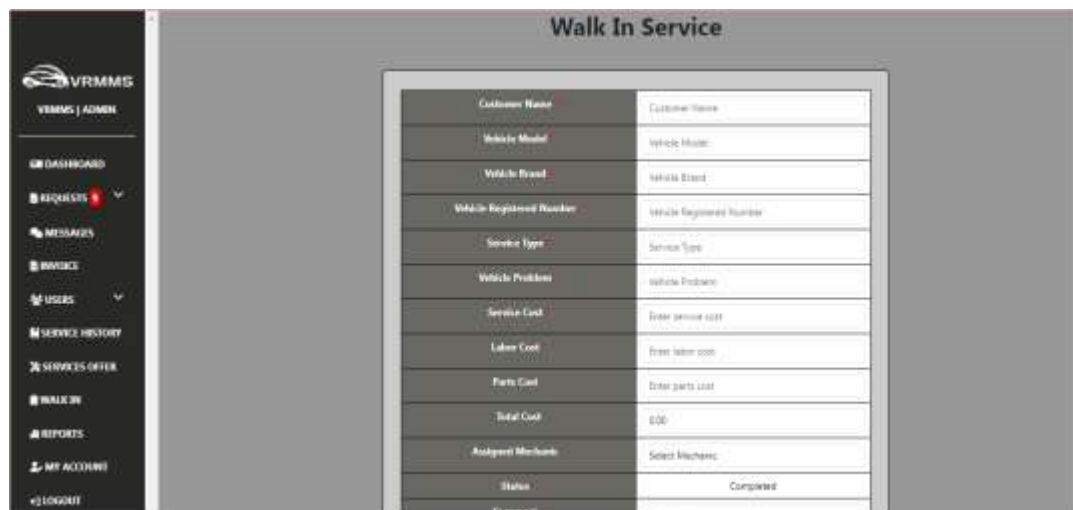
On this website, admin users are also accessible. This displays the number of administrators who have the ability to create reports. They can also access user and

mechanic data as well as other website functions. Depending on the circumstances, administrators may also be the store owners.



**Figure 33.** List of Services – Admin Side

The administrator can add, update active/inactive to visible in client side, and delete services from the list on the admin side. The admin will automatically cancel any inaccessible services; those that are available will only be visible on the user's website. The users can check the services that are offered on the homepage of the website. This service primarily focuses on bookings; no auto parts are offered.



**Figure 34.** Walk in Service – Admin Side

The walk-in side is available for clients who were not able to book their appointments through websites; even though this side is available, schedules and time slots may be entirely dependent on the shop, slots' availability, and the shop's mechanic. Once approved, the clients will be accommodated right away.

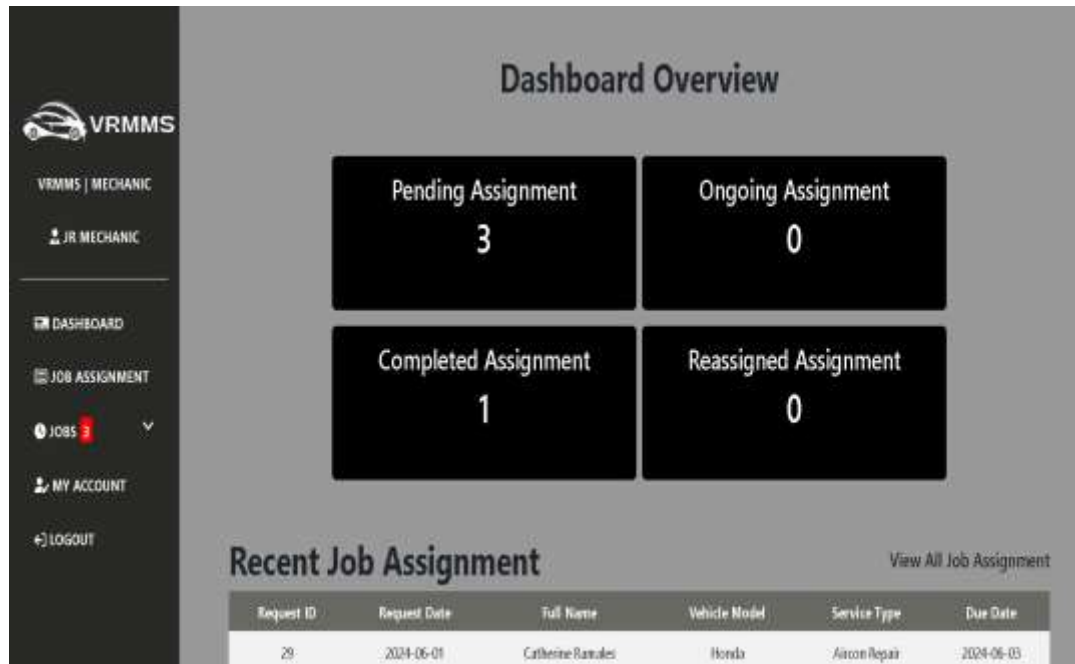
Owner	Vehicle Brand	Requested Date	Registration No.	Service Type	Date Finished	Request Status	Mechanic Name	Total	Service Status
Anna Michaela Gustin	BMW x3 BMW	May 18, 2024	AAA 124	Tire Replacement	May 27, 2024	Completed	Cisco Aicos	600.00	Completed
Anna Michaela Gustin	BMW 7 SERIES SEDAN BMW	May 27, 2024	HDN 1815	Tire Replacement	May 27, 2024	Completed	Cisco Aicos	6300.00	Completed
Carlene Ramales	Jeep Gladiator	May 18, 2024	348	Engine Diagnostics	May 25, 2024	Completed	Dabo Cruz	12850.00	Completed
angel jacobson	honda civic	May 19, 2024	9887	Battery Replacement	May 18, 2024	Completed	Cisco Aicos	14400.00	Completed
Steven	Sedan Toyota corolla altis	May 18, 2024	ABC 1326	Tire Replacement	May 18, 2024	Completed	Cisco Aicos	3.00	Completed
Faye Malacorn	Mustang Ford	May 18, 2024	129182795	Others: Maintenance check up	May 18, 2024	Completed	Dabo Cruz	5380.00	Completed

Owner	Vehicle Brand	Requested Date	Registration No.	Service Type	Date Finished	Request Status	Mechanic Name	Total	Service Status
Anna Michaela Gustin	BMW x3 BMW	May 18, 2024	AAA 124	Tire Replacement	May 27, 2024	Completed	Cisco Aicos	600.00	Completed
Anna Michaela Gustin	BMW 7 SERIES SEDAN BMW	May 27, 2024	HDN 1815	Tire Replacement	May 27, 2024	Completed	Cisco Aicos	6300.00	Completed
Carlene Ramales	Jeep Gladiator	May 18, 2024	348	Engine Diagnostics	May 25, 2024	Completed	Dabo Cruz	12850.00	Completed
angel jacobson	honda civic	May 19, 2024	9887	Battery Replacement	May 18, 2024	Completed	Cisco Aicos	14400.00	Completed
Steven	Sedan Toyota corolla altis	May 18, 2024	ABC 1326	Tire Replacement	May 18, 2024	Completed	Cisco Aicos	3.00	Completed
Faye Malacorn	Mustang Ford	May 18, 2024	129182795	Others: Maintenance check up	May 18, 2024	Completed	Dabo Cruz	5380.00	Completed

**Figure 35.** Generate Report – Admin Side

The report generated from the client's record is influenced by various filters such as mechanic, service type, completion date, and service status. The administrative staff

member who created this report needs to sign it. It is also possible to print and download this for personal use as a reference.



**Figure 36.** Dashboard Overview – Mechanic Side

This side focuses mostly on the mechanic side, where the mechanics can manage their pending assignments or works, ongoing assignments, completed work, and reassigned work. To stay on track, the mechanics' most recent job assignments are displayed on the screen below.

**Job Assignment**

VRMMS | MECHANIC

JS MECHANIC

DASHBOARD

JOB ASSIGNMENT

JOB 1

MY ACCOUNT

LOGOUT

Request ID	Full Name	Email	Mobile Number	Service Type	Service Status	Due Date	Action
19	Catherine Ramules	cathcathra06@gmail.com	09986745212	Aircon Repair	Completed	2024-06-07	
29	Catherine Ramules	cathcathra06@gmail.com	09986745212	Aircon Repair	Pending	2024-06-08	
29	Catherine Ramules	cathcathra06@gmail.com	09986745212	Aircon Repair	Pending	2024-06-08	
29	Catherine Ramules	cathcathra06@gmail.com	09986745212	Aircon Repair	Pending	2024-06-08	

Showing 1 to 4 of 4 entries

Previous Next

---

**Request ID** 29

**Request Date** 2024-06-07

**Vehicle Brand** Honda Civic

**Vehicle Registered Number** 1111

**Service Type** Aircon Repair

**Car Problem** hindi na gumagana yang air ng car ko

**Request Status** Confirmed

**Service Cost**

Due Date	2024-06-08
Service Cost	5000.00
Labor Cost	500.00
Parts Cost	9500.00
Total Cost	14100.00
Comment	thanks for trusting us. Please advise car status in your account history.
Mechanic Name	JS MECHANIC
Service Status	Pending
Date Completed	

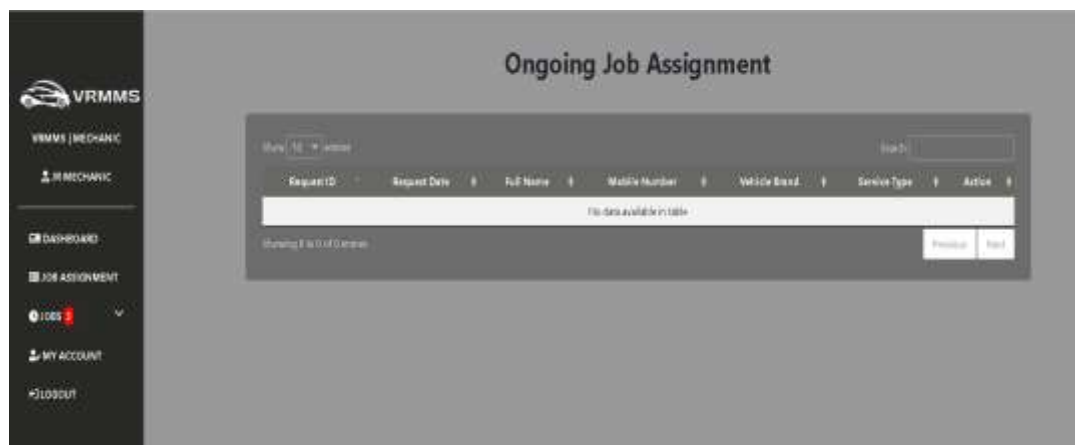
**Update Service Status**

New Status Choose... Options

**Figure 37. Job Assignment – Mechanic Side**

This figure shows the mechanic's job assignment. The mechanics have access to users' Request Id, full name, email, mobile number, service type, status, due date, and actions that can be altered by mechanics. This also includes the service fee and the update service status, which allows the mechanics to update the status of the car and provide remarks.

These functions will be activated automatically by the mechanics' pending jobs. This comprises the users' request IDs, request dates, full names, cellphone numbers, car brands, and service types. Mobile phone numbers are provided in this part so that the mechanics can contact to tell the user or the administrator if anything changes on the client's request.





**Update Service Status**

New Status	Choose... Options
Remarks	

Back Update

**Update Service Status**

New Status	Choose... Options
Remarks	Put remarks here...
Extra Service Cost	Enter extra service cost
Extra Labor Cost	Enter extra labor cost
Extra Parts Cost	Enter extra parts cost
Extra Total Cost	0.00

Back Update

**Figure 39.** Ongoing Job Assignment – Mechanic Side

All the mechanic's ongoing job assignments will be automatically listed below. Once the Mechanic updates the user's information, such as his/her status, and begins working on the user's car, his/her status will automatically change. Before proceeding to Figure 39, the repair person should approve the pending side of Figure 38. In keeping with this, the mechanic can also update the overall cost, such as adding an extra payment for labor; any modifications in payment will be dependent on the vehicle's problem.



**Figure 40.** Reassign Job Assignment – Mechanic Side

This is mainly focused on reassigning the mechanic's task assignment. This situation may arise as a result of the heavy schedule, time slot, and mechanics' availability. Once the job assignment is reallocated, the shop will guarantee that the users' vehicle is accommodated as soon as possible to avoid overlapping of work in the workshop.



**View Job Assignment**

Request ID	18
Request Date	2024-05-20
Vehicle Brand	Honda B2V
Vehicle Registered Number	80V
Service Type	Minor Repair
Car Problem	40A
Request Status	Completed

**Service Cost**

Due Date	2024-06-07
Service Cost	9000.00
Labor Cost	7500.00
Parts Cost	1500.00
Total Cost	11500.00
Comment	Thank you, your cars finished
Mechanic's Name	J. Victorini
Service Status	Completed
Date Completed	2024-05-29

**Figure 41:** Completed Job Assignment – Mechanic Side

Figure 41 illustrates the mechanics' completed job assignment. This figure will only show the mechanics' completed tasks, including the breakdown total of labor costs, parts costs, service expenses, and overall cost. It also includes other information such as the due date, the mechanic's name, service status, and service completion date.

**MY ACCOUNT**

Full Name: J. Victorini

Email address: j.victorini@gmail.com

Username: J.

Mobile Number: (09)96754221

Address: Victorini One

[Edit Account](#) [Change Password](#)

The screenshot shows a web application interface for a mechanic's account. On the left is a dark sidebar with the 'VRMMS' logo and navigation links: 'VRMMS | MECHANIC', 'RE MECHANIC', 'DASHBOARD', 'JOB ASSIGNMENT', 'LOGOUT', 'MY ACCOUNT', and 'LOGOUT'. The main content area is titled 'EDIT ACCOUNT' and contains a form with the following fields: 'Full Name' (with placeholder 'A. Veronik'), 'Email Address' (with placeholder 'a@gmail.com'), 'Username' (with placeholder 'A'), 'Address' (with placeholder 'Veronik Cruz'), and 'Mobile Number' (with placeholder '0989754321'). At the bottom right of the form are 'Cancel' and 'Update' buttons.

**Figure 42.** Account– Mechanic Side

This figure displays the accounts of the registered mechanics. This function also allows the mechanics to change and update their personal information, such as full name, email address, username, and mobile number, for verification purposes.

## Project Capabilities and Limitations

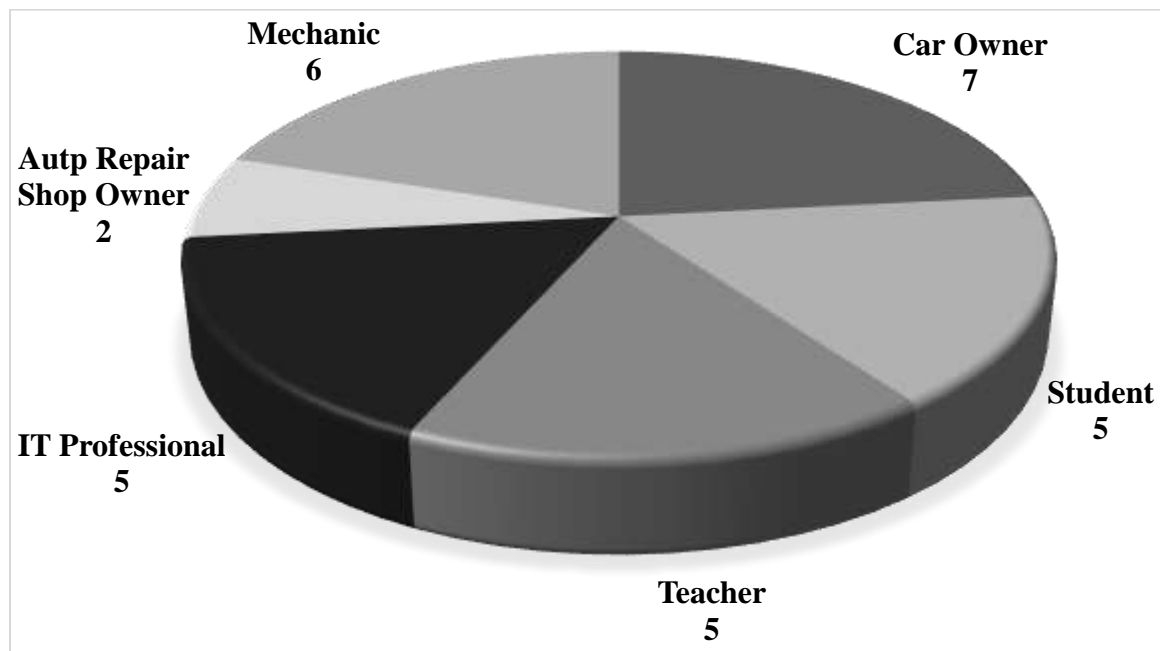
The system has the following capabilities:

- The system can be used to schedule an appointment for cars.
- The system can be used to track the car's maintenance history.
- The owner, auto owners, and mechanics all have their own privacy and security within the system.
- The system can store data and information for both users.
- The system will not share data with others, and it will only be accessed by the administrators.

The following are the limitations of the system:

- The system will only focus on booking.
- Given that the shop will not be selling any car parts, the system will not have any inventory.
- The site will only be accessible with internet access or Wi-Fi.
- The system is only compatible with desktop and laptops.

*Pie Chart 1: Demographics*



As researchers, the aim of this thesis is to evaluate the system through the responses of purposely selected participants, totaling 30 individuals. Among these respondents, a significant portion comprise car owners, while the minority represents auto repair shop owners. The evaluation sought to gather insights into the effectiveness and usability of the system based on the ISO 25010, with a focus on its practical application within the automotive industry. The goal of this project system is to offer a systematic evaluation of

the system's performance and possible areas for improvement by involving both auto repair shop owners and car owners.

**Table 5:** Functionality Stability Testing Table

Criteria	Total	Weighted Mean	Equivalent
1. <b>Completeness.</b> The system meets all the set of specific functions covers all the task and user objection.	105	3.50	Highly Acceptable
2. <b>Correctness.</b> The system provides features aligned with the user expectation and provides the correct result with the needed degree of precision.	107	3.56	Highly Acceptable
3. <b>Appropriateness.</b> The system facilitates the accomplishment of the specified tasks and objectives.	112	3.73	Highly Acceptable

This study shows that the Vehicle Repair and Maintenance Management System has undergone an objective assessment based on ISO 25010 standards, focusing on functional stability. The test results indicated that the system's functionality is highly acceptable to the respondents, demonstrating solid functionality under various operational conditions. These assessments emphasized the system's ability to consistently execute repair and maintenance tasks without failures, thereby ensuring reliable service delivery.

**Table 6:** Usability Testing Table

Criteria	Total	Weighted Mean	Equivalent
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.	107	3.56	Highly Acceptable
2. <b>Learnability.</b> The system can be easy to learn and still use the system with efficiency, productivity, self-determination from hazard, and fulfillment in a detailed background of use.	108	3.60	Highly Acceptable
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs, and other tools so that the client can easily access the system.	104	3.46	Acceptable
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.	105	3.50	Acceptable
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.	110	3.66	Highly Acceptable
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.	108	3.60	Highly Acceptable

This study has shown that the Vehicle Repair and Maintenance Management System (VRMMS) was evaluated for usability based on the ISO 25010 standard, showing essential information into its performance. The evaluation result indicated that the system's usability is highly acceptable, with particular strengths in effectiveness and efficiency, providing users with a smooth and productive experience. However, the least acceptable

aspects identified were operationality and user interface protection, where the respondents noted weaknesses that could impact the overall user experience and stability.

**Table 7:** Security Testing Table

Criteria	Total	Weighted Mean	Equivalent
1. <b>Confidentiality.</b> The systems data is only accessed by the authorized organization and not all information is available to the public consumption, and only authorized higher personnel can access the data.	106	3.53	Highly Acceptable
2. <b>Integrity.</b> The system cannot be easily accessed by an unauthorized user.	112	3.73	Highly Acceptable
3. <b>Non-Reputation.</b> The system records all the processes that have been done within the system.	111	3.70	Highly Acceptable
4. <b>Accountability.</b> The system can trace the actions and person and prove to be the one claimed.	111	3.70	Highly Acceptable
5. <b>Authenticity</b> – The system records and validates all the entities identification and changes that will be made within the system.	104	3.46	Acceptable

This study shows that the Vehicle Repair and Maintenance Management System was evaluated based on the ISO 25010 standards, focusing on security aspects. The results indicated that the system's security is highly acceptable, meeting stringent criteria for



protecting sensitive data and ensuring system integrity. However, the least acceptable aspect was the authenticity of the respondents, suggesting a need for improved verification methods to ensure the reliability of user inputs.

**Table 8:** Reliability Testing Table

Criteria	Total	Weighted Mean	Equivalent
1. <b>Faultlessness.</b> The system meets needs for consistency lower than standard process	104	3.46	Acceptable
2. <b>Availability.</b> The system is working and reachable when essential for client.	112	3.73	Highly Acceptable
3. <b>Fault Tolerance.</b> The system functions as planned in spite of the presence of hardware or software accountabilities.	107	3.56	Highly Acceptable
4. <b>Recoverability.</b> In the event of an disruption or a failure, the system can improve the data straight and re-establish the chosen state of the system.	108	3.60	Highly Acceptable

This study shows that the Vehicle Repair and Maintenance Management System's test evaluation, based on the ISO 25010 reliability standards, yielded highly acceptable results overall. Especially, the system excelled in reliability, demonstrating consistent performance and strong operation under many conditions. However, the evaluation result revealed that faultlessness, or the system's ability to operate without failure, was the least acceptable aspect as perceived by respondents. Despite this, the overall reliability of the

system remains commendable, confirming its potential for effective deployment in vehicle maintenance operations.

### **Project Evaluation**

The project evaluation was done by a variety of 30 individuals ranging from car owner, student, IT Professional, Mechanic, and Repair Shop Owner where visited the webpage. The evaluation was undertaken to determine the software quality in terms of its functional stability, usability, security, and reliability.

Under Functional Stability, 16 respondents rated 4.00, 13 respondents rated 3.00, and 1 respondent rated 2.00 for functional completeness (53.33 %, 43.33%, and 3.33% of the respondents, respectively), 18 respondents rated 4.00, 11 respondents rated 3.00, and 1 respondent rated 2.00 for functional correctness ( 60%, 36.67%, and 3.33% of the respondents, respectively), and 22 respondents rated 4.00 and 8 respondents rated 3.00 for functional appropriateness ( 73.33% and 26.67% of the respondents, respectively).

Under Usability, 17 respondents rated 4.00 and 13 respondents rated 3.00 for appropriateness (56.67% and 43.33% of the respondents, respectively), 18 respondents rated 4.00 and 12 respondents rated 3.00 for learnability (60% and 40% of the respondents, respectively), 22 respondents rated 4.00 and 8 respondents rated 3.00 for operability (46.67% and 53.33% of the respondents, respectively), 16 respondents rated 4.00, 13 respondents rated 3.00, and 1 respondent rated 2.00 for user interface protection (53.33%, 43.33%, and 3.33% of the respondents, respectively), 20 respondents rated 4.0 and 10 respondents rated 3.0 for user interface aesthetics (66.67% and 33.33% of the respondents,

respectively), and 18 respondents rated 4.00 and 12 respondents rated 3.00 for accessibility (60% and 40% of the respondents, respectively).

Under security, 16 respondents rated 4.00 and 14 respondents rated 3.00 for confidentiality (53.33% and 46.57% of the respondents, respectively), 22 respondents rated 4.0 and 8 respondents rated 3.00 for integrity (73.33% and 26.67% of the respondents, respectively), 21 respondent rated 4.00 and 9 respondents rated 3.00 for non-reputation (70% and 30% of the respondents, respectively), 19 respondents rated 4.00 and 11 respondents rated 3.00 for accountability (63.33% and 36.67% of the respondents respectively), and 15 respondents rated 4.00, 14 respondents rated 3.00, and 1 respondent rated 2.00 for authenticity (50%, 46.67%, and 3.33% of the respondents, respectively).

Under reliability, 14 respondents rated 4.00 and 16 respondents rated 3.00 for faultlessness (46.67% and 53.33% of the respondents, respectively), 22 respondents rated 4.00 and 8 respondents rated 3.00 for availability (73.33% and 26.67% of the respondents, respectively), 17 respondents rated 4.00 and 13 respondents rated 3.00 for fault tolerance (56.67% and 43.33% of the respondents, respectively), and 18 respondents rated 4.00 and 12 respondents rated 3.00 for recoverability (60% and 40% of the respondents, respectively).

**Table 9:** Project Evaluation

CRITERIA	SCALE				FREQUENCY			
	4	3	2	1	4	3	2	1
<b>Functional Stability</b>								
1. Completeness	16	13	1	0	53.33%	43.33%	0%	0%
2. Correctness	18	11	1	0	60%	36.67%	3.33%	0%
3. Appropriateness	22	8	0	0	73.33%	26.67%	0%	0%

<b>Usability</b>								
1. Appropriateness	17	13	0	0	56.67%	43.33%	0%	0%
2. Learnability	18	12	0	0	60%	40%	0%	0%
3. Operability	14	16	0	0	46.67%	53.33%	0%	0%
4. User Interface Protection	16	13	1	0	53.33%	43.33	3.33	0%
5. User Interface Aesthetics	20	10	0	0	66.67%	33.33%	0%	0%
6. accessibility	18	12	0	0	60%	40%	0%	0%

<b>Security</b>								
1. Confidentiality	16	14	0	0	53.33%	46.67%	0%	0%
2. Integrity	22	8	0	0	73.33%	26.67%	0%	0%
3. Non-Reputation	21	9	0	0	70%	30%	0%	0%
4. Accountability	19	11	0	0	63.33%	36.67%	0%	0%
5. Authenticity	15	14	1	0	50%	46.67%	3.33%	0%
<b>Reliability</b>								
1. Faultlessness	14	16	0	0	46.67%	53.33%	0%	0%
2. Availability	22	8	0	0	73.33%	26.67%	0%	0%
3. Fault Tolerance	17	13	0	0	56.67%	43.33%	0%	0%
4. Recoverability	18	12	0	0	60%	40%	0%	0%

## **Chapter 5**

### **SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS**

This chapter discusses the summary of findings, conclusions derived, and the corresponding recommendations of the study.

#### **Summary of Findings**

The system was evaluated as "Highly Acceptable" in terms of accuracy by the evaluators because it delivered functionalities that met specified demands when utilized under stated conditions to achieve specified goals of functionality, usability, security, and reliability in a specific context of use. At the university, the results showed that the Vehicle Repair and Maintenance Management System (VRMMS) remained usable, dependable, functional, also efficient. However, there is room for improvement in terms of the number of features available and the software specifications. The findings indicated that VRMMS was on track to accomplish its aims and goals.

A web-based vehicle repair and maintenance management system built using the agile methodology provided a dynamic and efficient way to manage automotive services. Figure 7 showed the Agile Software Development Model that was followed during the system's development to achieve the intended result. ERD diagrams were beneficial in describing the relationships between each entity in the database because they were often used in combination with a data flow diagram to illustrate the contents of a data store. They were particularly helpful in making relational databases since they allowed us to perceive how information was associated in a conventional manner.

To ensure that the application's various functionalities are working effectively, the test cases were shown to be "Highly Acceptable" based on the test evaluation. Involving 30 individuals. Among these respondents, a significant portion comprised car owners, while a minority represented auto repair shop owners. The evaluation sought to gather insights into the effectiveness and usability of the system based on ISO 25010, with a focus on its practical application within the automotive industry. The system's functionality was highly acceptable to the respondents, demonstrating solid functionality under various operational conditions.

These assessments emphasized the system's ability to consistently execute repair and maintenance tasks without failures, thereby ensuring reliable service delivery. Usability was highly acceptable, with particular strengths in effectiveness and efficiency, providing users with a smooth and productive experience. However, the least acceptable aspects identified were operationality and user interface protection, where respondents noted weaknesses that could impact the overall user experience and stability. The system's security was highly acceptable, meeting stringent criteria for protecting sensitive data and ensuring system integrity.

However, the least acceptable aspect was the authenticity of the respondents, suggesting a need for improved verification methods to ensure the reliability of user inputs. The reliability standards yielded highly acceptable results overall. Specifically, the system excelled in reliability, demonstrating consistent performance and strong operation under many conditions. However, the evaluation revealed that faultlessness, or the system's ability to operate without failure, was the least acceptable aspect as perceived by respondents.

## **Conclusions**

In deliberation of the purposes of the study and the outcomes of the tests and evaluations conducted, the following conclusions were drawn:

- The vehicle repair and maintenance management system were successfully planned to perform its intended duties, such as record keeping, managing an administrative dashboard for handling schedules from clients, viewing service history, managing mechanic job allocation, and generating reports. This system allows clients to create, manage, schedule, monitor, and view their queries independently.
- The vehicle repair and maintenance management system proved to be effective in terms of functionality and usability based on ISO 25010.

## **Recommendations**

The following recommendations are offered for related research in vehicle repair and maintenance management system:

- Needs a framework that determination begins utilizing hybrid strategies with other optimization methods.
- Enhance the features of system by adding the following:
  - a. SMS Reminder Service
  - b. Need updated inventory
  - c. Capable of uploading images when filling out a form.

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## APPENDICES

### Appendices A: Documentation for Evaluation



*Figure 43: Conducting System Evaluation*



## Appendices B: Evaluation Instrument



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### EVALUATION INSTRUMENT FOR VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM

Name (optional):

RICARDO BENJIE R. MALAN III

Respondent's Category:

- ☐ Vehicle Owner      ☐ IT Professional  
☐ Student              ☒ Auto Repair shop owner  
☐ Teacher

**Instruction:** This evaluation sheet will be used to analyze and improve the presented system. Kindly answer the following questions by placing a check (✓) under the corresponding numerical rating.

Numerical Rating	Equivalent
4	Highly Acceptable
✓ 3	Acceptable
2	Fairly Acceptable
1	Not Acceptable

CRITERIA	RATING			
	4	3	2	1
<b>A. Functional Stability</b>				
1. <b>Completeness.</b> The system meets all the set of specific functions covers all the task and user objection.		✓		
2. <b>Correctness.</b> The system provides features aligned with the user expectation and provides the correct result with the needed degree of precision.		✓		
3. <b>Appropriateness.</b> The system facilitates the accomplishment of the specified tasks and objectives.		✓		
<b>B. Usability</b>				
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.		✓		
2. <b>Learnability.</b> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	✓			
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs, and other tools so that the user can easily use the system.	✓			
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.	✓			
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.		✓		
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.		✓		
<b>C. Security.</b>		✓		



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1. <b>Confidentiality.</b> The systems data is only accessed by the authorized organization and not all information is available to the public consumption, and only authorized higher personnel can access the data.	✓			
2. <b>Integrity.</b> The system cannot be easily accessed by an unauthorized user.	✓			
3. <b>Non-Reputation.</b> The system records all the processes that have been done within the system.		✓		
4. <b>Accountability.</b> The system can trace the actions and person and prove to be the one claimed.		✓		
5. <b>Authenticity</b> – The system records and validates all the entities identification and changes that will be made within the system.		✓		
<b>D. Reliability</b>				
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.		✓		
2. <b>Learnability.</b> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	✓			
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs and other tools so that the user can easily use the system.	✓			
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.	✓			
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.		✓		
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.	✓			
<b>E. Reliability</b>				
1. <b>Faultlessness.</b> The system meets needs for reliability under normal operation		✓		
2. <b>Availability.</b> The system is operational and accessible when required for use.	✓			
3. <b>Fault Tolerance.</b> The system operates as intended despite the presence of hardware or software faults	✓			
4. <b>Recoverability.</b> In the event of an interruption or a failure, the system can recover the data directly and re-establish the desired state of the system.		✓		

### Recommendations:

CUSTOMIZE THE PORTAL. PRE & POST DIAGNOSIS. CHAT WITH US  
 SMS REMINDER SERVICE

Figure 44: System Evaluation of Auto Repair Owner



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### EVALUATION INSTRUMENT FOR VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM

Name (optional):

*Charlie Tapan*

Respondent's Category:

- ☐ Vehicle Owner      ☒ IT Professional  
☐ Student              ☐ Auto Repair shop owner  
☐ Teacher

**Instruction:** This evaluation sheet will be used to analyze and improve the presented system. Kindly answer the following questions by placing a check (✓) under the corresponding numerical rating.

Numerical Rating	Equivalent
4	Highly Acceptable
3	Acceptable
2	Fairly Acceptable
1	Not Acceptable

CRITERIA	RATING			
	4	3	2	1
<b>A. Functional Stability</b>				
1. <i>Completeness.</i> The system meets all the set of specific functions covers all the task and user objection.	✓			
2. <i>Correctness.</i> The system provides features aligned with the user expectation and provides the correct result with the needed degree of precision.	✓			
3. <i>Appropriateness.</i> The system facilitates the accomplishment of the specified tasks and objectives.	✓			
<b>B. Usability</b>				
1. <i>Appropriateness.</i> The system is appropriate to the needs of the users.		✓		
2. <i>Learnability.</i> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	✓			
3. <i>Operability.</i> The system provides generic input fields, buttons, tabs, and other tools so that the user can easily use the system.	✓			
4. <i>User Interface Protection.</i> The system has specific labels and prompt messages to protect the user from making errors on using the system.	✓			
5. <i>User Interface Aesthetics.</i> The system has a pleasing and satisfying user interface and it is friendly to use.	✓			
6. <i>Accessibility.</i> The system can be accessed easily on its intended place.	✓			
<b>C. Security.</b>				



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1. <b>Confidentiality.</b> The systems data is only accessed by the authorized organization and not all information is available to the public consumption, and only authorized higher personnel can access the data.	✓			
2. <b>Integrity.</b> The system cannot be easily accessed by an unauthorized user.	✓			
3. <b>Non-Repudiation.</b> The system records all the processes that have been done within the system.	✓			
4. <b>Accountability.</b> The system can trace the actions and person and prove to be the one claimed.	✓			
5. <b>Authenticity</b> – The system records and validates all the entities identification and changes that will be made within the system.	✓			
<b>D. Reliability</b>				
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.	✓			
2. <b>Learnability.</b> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	✓			
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs and other tools so that the user can easily use the system.	✓			
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.	✓			
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.	✓			
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.	✓			
<b>E. Reliability</b>				
1. <b>Faultlessness.</b> The system meets needs for reliability under normal operation.	✓			
2. <b>Availability.</b> The system is operational and accessible when required for use.	✓			
3. <b>Fault Tolerance.</b> The system operates as intended despite the presence of hardware or software faults.	✓			
4. <b>Recoverability.</b> In the event of an interruption or a failure, the system can recover the data directly and re-establish the desired state of the system.	✓			

### Recommendations:

*If the scope meets the requirement and functional, please try to expand the scope (err) or develop.*

**Figure 45: System Evaluation of IT Professional**



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### EVALUATION INSTRUMENT FOR VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM

Name (optional):

L/O

Respondent's Category:

☐ Vehicle Owner

☐ IT Professional

☐ Student

☐ Auto Repair shop owner

☐ Teacher

MECHANIC

**Instruction:** This evaluation sheet will be used to analyze and improve the presented system. Kindly answer the following questions by placing a check (✓) under the corresponding numerical rating.

Numerical Rating	Equivalent
4	Highly Acceptable
3	Acceptable
2	Fairly Acceptable
1	Not Acceptable

CRITERIA	RATING			
	4	3	2	1
<b>A. Functional Stability</b>				
1. <b>Completeness.</b> The system meets all the set of specific functions covers all the task and user objection.		/		
2. <b>Correctness.</b> The system provides features aligned with the user expectation and provides the correct result with the needed degree of precision.	/			
3. <b>Appropriateness.</b> The system facilitates the accomplishment of the specified tasks and objectives.		/		
<b>B. Usability</b>				
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.		/		
2. <b>Learnability.</b> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.		/		
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs, and other tools so that the user can easily use the system.		/		
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.	/			
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.	/			
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.	/			
<b>C. Security.</b>				





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1. <b>Confidentiality.</b> The systems data is only accessed by the authorized organization and not all information is available to the public consumption, and only authorized higher personnel can access the data.	/			
2. <b>Integrity.</b> The system cannot be easily accessed by an unauthorized user.		/		
3. <b>Non-Reputation.</b> The system records all the processes that have been done within the system.		/		
4. <b>Accountability.</b> The system can trace the actions and person and prove to be the one claimed.	/			
5. <b>Authenticity</b> – The system records and validates all the entities identification and changes that will be made within the system.	/			
<b>D. Reliability</b>				
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.		/		
2. <b>Learnability.</b> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.		/		
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs and other tools so that the user can easily use the system.	/			
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.	/			
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.		/		
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.	/			
<b>E. Reliability</b>				
1. <b>Faultlessness.</b> The system meets needs for reliability under normal operation	/			
2. <b>Availability.</b> The system is operational and accessible when required for use.	/			
3. <b>Fault Tolerance.</b> The system operates as intended despite the presence of hardware or software faults		/		
4. <b>Recoverability.</b> In the event of an interruption or a failure, the system can recover the data directly and re-establish the desired state of the system.	/			

Recommendations:

SYSTEM SPECIFIC ABOUT MECHANIC TOPIC

Figure 46: System Evaluation of Mechanic


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**EVALUATION INSTRUMENT FOR  
 VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM**

Name (optional):

kin

Respondent's Category:



Vehicle Owner



IT Professional



Student



Auto Repair shop owner



Teacher

**Instruction:** This evaluation sheet will be used to analyze and improve the presented system. Kindly answer the following questions by placing a check (✓) under the corresponding numerical rating.

Numerical Rating	Equivalent
4	Highly Acceptable
3	Acceptable
2	Fairly Acceptable
1	Not Acceptable

CRITERIA	RATING			
	4	3	2	1
<b>A. Functional Stability</b>				
1. <i>Completeness.</i> The system meets all the set of specific functions covers all the task and user objection.		/		
2. <i>Correctness.</i> The system provides features aligned with the user expectation and provides the correct result with the needed degree of precision.	/			
3. <i>Appropriateness.</i> The system facilitates the accomplishment of the specified tasks and objectives.		/		
<b>B. Usability</b>				
1. <i>Appropriateness.</i> The system is appropriate to the needs of the users.	/			
2. <i>Learnability.</i> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.		/		
3. <i>Operability.</i> The system provides generic input fields, buttons, tabs, and other tools so that the user can easily use the system.		/		
4. <i>User Interface Protection.</i> The system has specific labels and prompt messages to protect the user from making errors on using the system.	/			
5. <i>User Interface Aesthetics.</i> The system has a pleasing and satisfying user interface and it is friendly to use.		/		
6. <i>Accessibility.</i> The system can be accessed easily on its intended place.	/			
<b>C. Security.</b>				


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1. <i>Confidentiality</i> . The systems data is only accessed by the authorized organization and not all information is available to the public consumption, and only authorized higher personnel can access the data.	/			
2. <i>Integrity</i> . The system cannot be easily accessed by an unauthorized user.	/			
3. <i>Non-Reputation</i> . The system records all the processes that have been done within the system.	/			
4. <i>Accountability</i> . The system can trace the actions and person and prove to be the one claimed.	/			
5. <i>Authenticity</i> – The system records and validates all the entities identification and changes that will be made within the system.	/			
<b>D. Reliability</b>				
1. <i>Appropriateness</i> . The system is appropriate to the needs of the users.		/		
2. <i>Learnability</i> . The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.		/		
3. <i>Operability</i> . The system provides generic input fields, buttons, tabs and other tools so that the user can easily use the system.	<del>25</del>	/		
4. <i>User Interface Protection</i> . The system has specific labels and prompt messages to protect the user from making errors on using the system.	/			
5. <i>User Interface Aesthetics</i> . The system has a pleasing and satisfying user interface and it is friendly to use.	27	/		
6. <i>Accessibility</i> . The system can be accessed easily on its intended place.	/			
<b>E. Reliability</b>				
1. <i>Faultlessness</i> . The system meets needs for reliability under normal operation		/		
2. <i>Availability</i> . The system is operational and accessible when required for use.	/			
3. <i>Fault Tolerance</i> . The system operates as intended despite the presence of hardware or software faults	/			
4. <i>Recoverability</i> . In the event of an interruption or a failure, the system can recover the data directly and re-establish the desired state of the system.	/			

Recommendations:

more picture about the system

**Figure 47: System Evaluation of Vehicle Owner**





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**EVALUATION INSTRUMENT FOR  
 VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM**

Name (optional): \_\_\_\_\_

**DRIVER**

Respondent's Category:

- ☐ Vehicle Owner      ☒ IT Professional  
☒ Student      ☐ Auto Repair shop owner  
☐ Teacher

**Instruction:** This evaluation sheet will be used to analyze and improve the presented system. Kindly answer the following questions by placing a check (✓) under the corresponding numerical rating.

Numerical Rating	Equivalent
4	Highly Acceptable
3	Acceptable
2	Fairly Acceptable
1	Not Acceptable

CRITERIA	RATING			
	4	3	2	1
<b>A. Functional Stability</b>				
1. <i>Completeness.</i> The system meets all the set of specific functions covers all the task and user objection.	✓	✗		
2. <i>Correctness.</i> The system provides features aligned with the user expectation and provides the correct result with the needed degree of precision.		✓		
3. <i>Appropriateness.</i> The system facilitates the accomplishment of the specified tasks and objectives.		✓		
<b>B. Usability</b>				
1. <i>Appropriateness.</i> The system is appropriate to the needs of the users.		✓		
2. <i>Learnability.</i> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	✓			
3. <i>Operability.</i> The system provides generic input fields, buttons, tabs, and other tools so that the user can easily use the system.		✓		
4. <i>User Interface Protection.</i> The system has specific labels and prompt messages to protect the user from making errors on using the system.		✓		
5. <i>User Interface Aesthetics.</i> The system has a pleasing and satisfying user interface and it is friendly to use.	✓			
6. <i>Accessibility.</i> The system can be accessed easily on its intended place.	✓			
<b>C. Security.</b>				



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1. <b>Confidentiality.</b> The systems data is only accessed by the authorized organization and not all information is available to the public consumption, and only authorized higher personnel can access the data.	✓			
2. <b>Integrity.</b> The system cannot be easily accessed by an unauthorized user.	✓			
3. <b>Non-Repudiation.</b> The system records all the processes that have been done within the system.	✓			
4. <b>Accountability.</b> The system can trace the actions and person and prove to be the one claimed.	✓			
5. <b>Authenticity.</b> The system records and validates all the entities identification and changes that will be made within the system	✓			
<b>D. Reliability</b>				
1. <b>Appropriateness.</b> The system is appropriate to the needs of the users.		✓		
2. <b>Learnability.</b> The system can be easy to learn and still use the system with effectiveness, efficiency, freedom from risk, and satisfaction in a specified context of use.	✓			
3. <b>Operability.</b> The system provides generic input fields, buttons, tabs and other tools so that the user can easily use the system.		✓		
4. <b>User Interface Protection.</b> The system has specific labels and prompt messages to protect the user from making errors on using the system.		✓		
5. <b>User Interface Aesthetics.</b> The system has a pleasing and satisfying user interface and it is friendly to use.		✓		
6. <b>Accessibility.</b> The system can be accessed easily on its intended place.	✓			
<b>E. Reliability</b>				
1. <b>Faultlessness.</b> The system meets needs for reliability under normal operation		✓		
2. <b>Availability.</b> The system is operational and accessible when required for use.		✓		
3. <b>Fault Tolerance.</b> The system operates as intended despite the presence of hardware or software faults		✓	mm	
4. <b>Recoverability.</b> In the event of an interruption or a failure, the system can recover the data directly and re-establish the desired state of the system.		✓		

### Recommendations:

Fix some parts in the UI.  
 Some details are overlapping.

Figure 48: System Evaluation of Student

## Appendices C: User Manual



### Version 1

#### 1. Introduction

A VRMMS is a comprehensive software-based system designed to automate the entire vehicle repair and maintenance process. It encompasses features like scheduling and tracking repairs, documenting maintenance histories, and generating billing reports that summarize the expenses involved in the repair and maintenance. By consolidating various components of vehicle maintenance into a unified platform, VRMMS empowers enterprises to achieve heightened efficiency, improved safety, and substantial cost savings.

#### 2. System Requirements

- Operating System: Windows 10 or latest
- RAM: 4GB or more
- Storage: 500MB of available space
- Internet Browser: Latest version of Chrome, Firefox, Safari, or Edge
- Internet Connection: any internet provider as long as it can load the website.

- Preferred device: Desktop Computer or Laptop

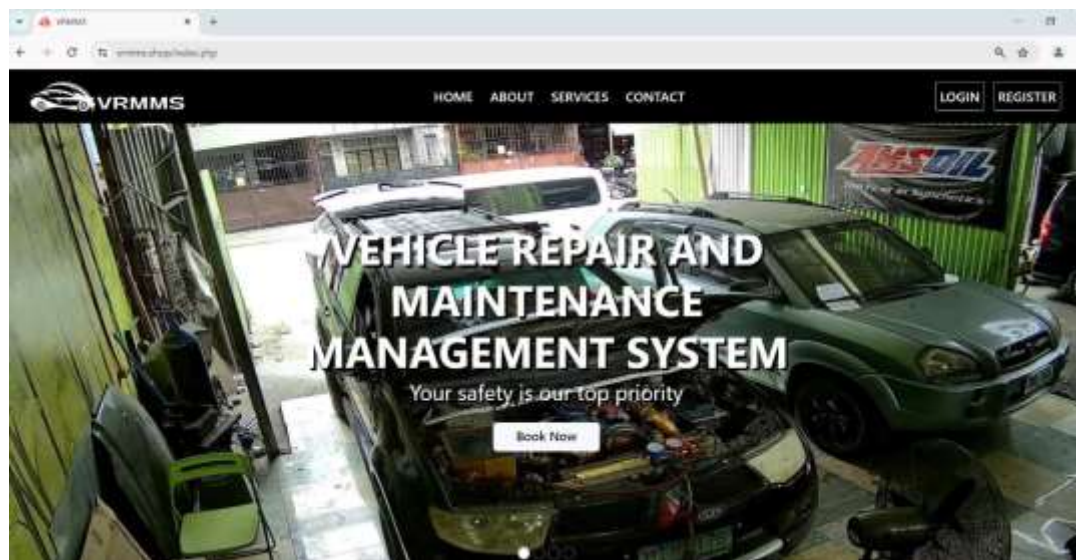
### 3. Getting Started

#### Register / Logging In

1. Open your web browser and if you happen to have the link you can just input it into the search engine, or you can just simply type “vrms.shop” to access the site.



2. It will direct you to the home page where you can see the **log in** and **register** button.

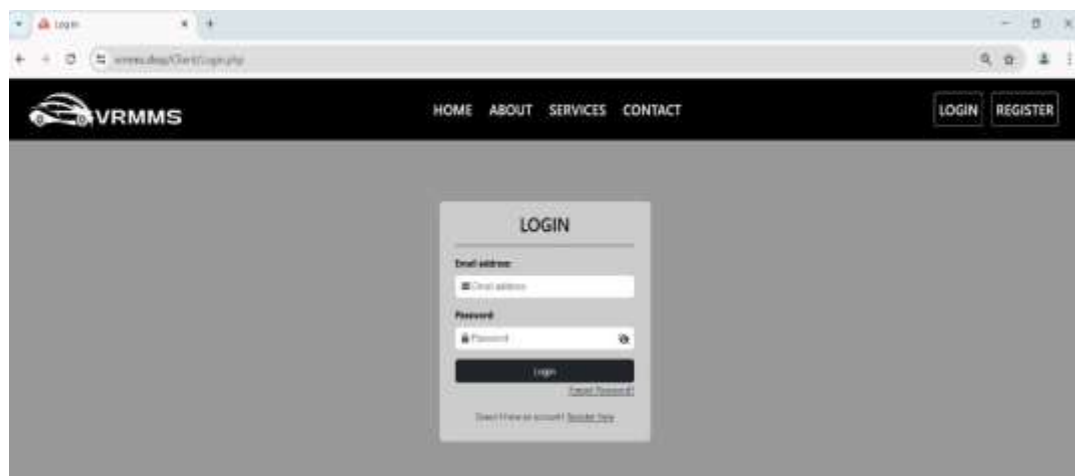


## Admin

3. Click the login button once you reach the home page.
4. Enter your username and password.
5. Click the "Login" button.

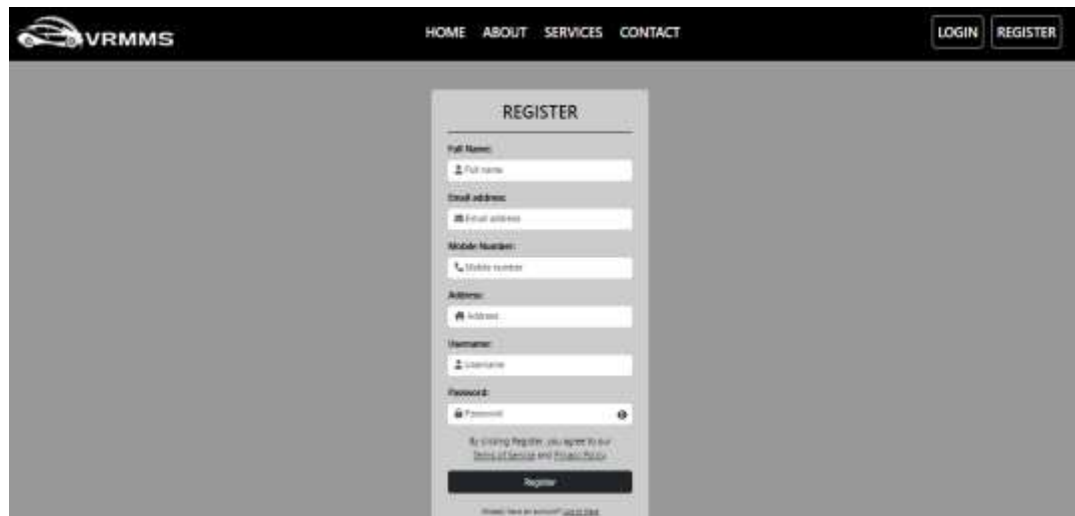
## Mechanic

1. Click the login button once you reach the home page.
2. Enter your username and password.
3. Click the "Login" button.



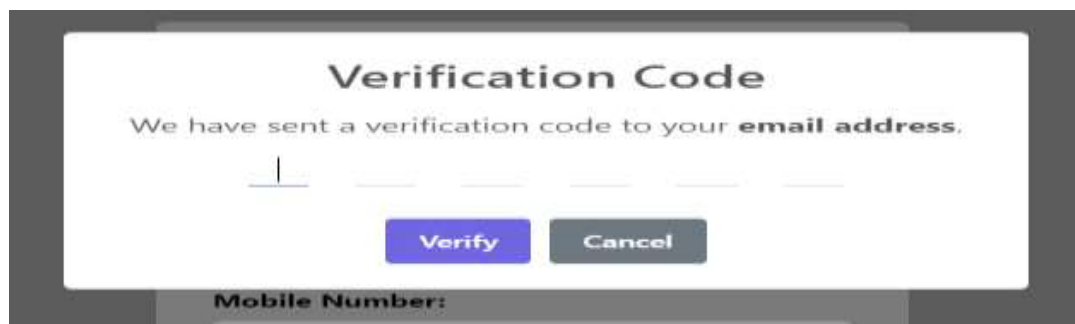
## Client

4. If you are new to the website, before you can book, first you need to register so that you can access the booking process.



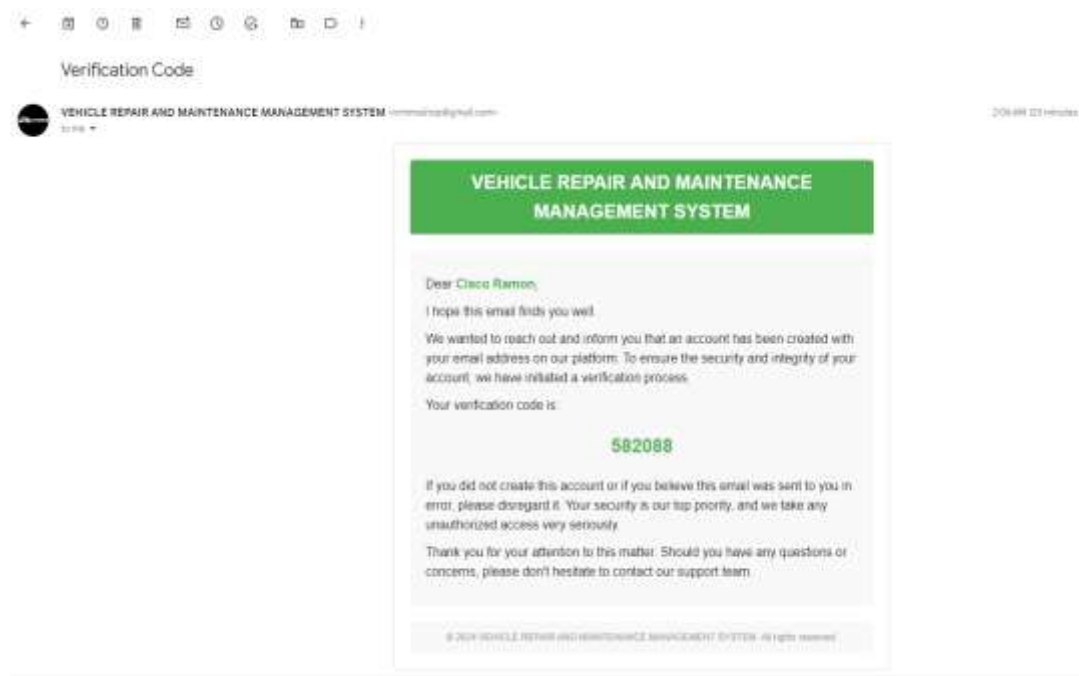
The screenshot shows the VRMMS website's registration page. At the top, there is a navigation bar with the VRMMS logo and links for HOME, ABOUT, SERVICES, and CONTACT. On the right side of the navigation bar are buttons for LOGIN and REGISTER. The main content area features a 'REGISTER' form with the following fields: Full Name (with a person icon), Email address (with an envelope icon), Mobile Number (with a phone icon), Address (with a location pin icon), Username (with a person icon), and Password (with a key icon and a toggle for visibility). Below the password field, there is a checkbox for 'By creating an account, you agree to our Terms of Service and Privacy Policy'. At the bottom of the form is a 'Register' button. A small copyright notice is visible at the very bottom of the page.

5.1 Registration process includes filling up your personal details such as full name, working email address (because it will serve as your back up account when you forgot your password or verifying your account), phone number, address, lastly your desired username and password.



The screenshot shows a 'Verification Code' screen. It features a title 'Verification Code' and a message: 'We have sent a verification code to your email address.' Below the message is a 6-digit input field with a vertical line in the first position. At the bottom of the input field are two buttons: 'Verify' (in blue) and 'Cancel' (in grey). Below the buttons, the text 'Mobile Number:' is partially visible.

5.2 Once you enter your details there will be a 6-digit verifying code that will be sent to your email to verify your identity.



5.3 Failure to comply with the verification process will lead to failure of creating your account.

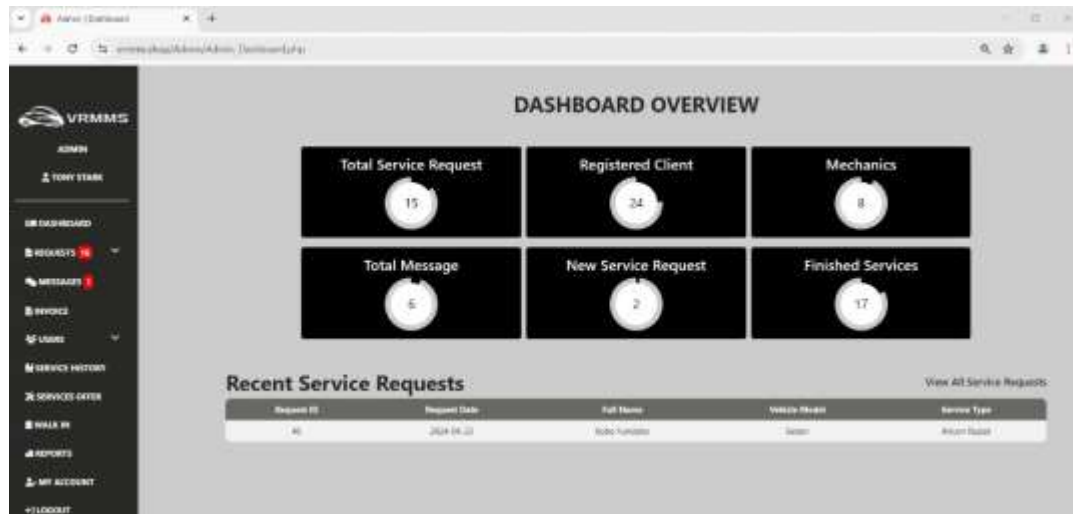
5.4 After you register and verify your account and it goes smoothly you can now login your created account.



6. If you happen to have already an account, you can simply click the login button and enter your username and password

## Dashboard Overview

### Admin



After logging in, you will be directed to the dashboard. The dashboard provides a summary of recent activities, service requests, and quick access to various modules like registered clients, messages, repair and maintenance orders, active mechanics, and reports.

### Client

**VRMMS** HOME ABOUT SERVICES CONTACT **HEY DAN**

**June 2024**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

**SERVICE REQUEST FORM**

Date:

Select Car:

Vehicle Model:

Vehicle Brand:

Registration Number:

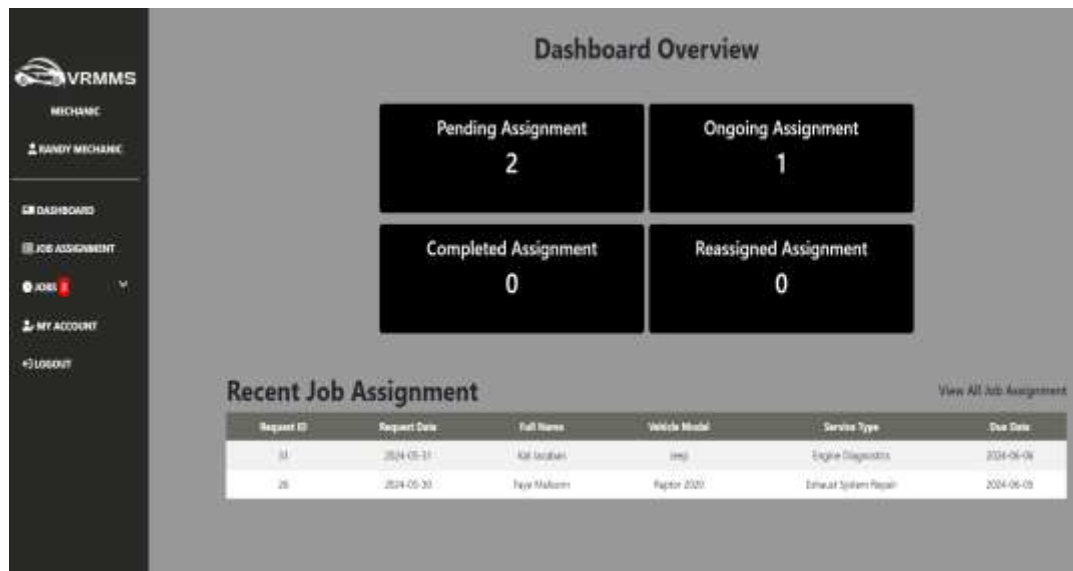
Service Type:

Vehicle Problem:



In client side, after you login your account it will redirect to the service request form together with the calendar where you can see the available dates that you can choose for your service request. Additionally, you can select a car profile that will automatically fill out the vehicle model, vehicle brand, and registration number field.

## Mechanic



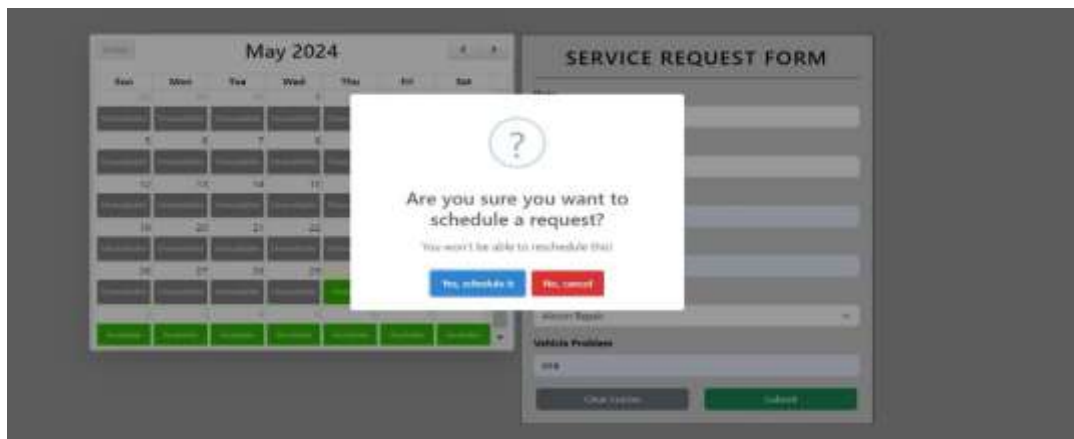
Once the mechanic logs into his/her account s(he) can see his/her pending jobs and new added job assignment given by the admin.

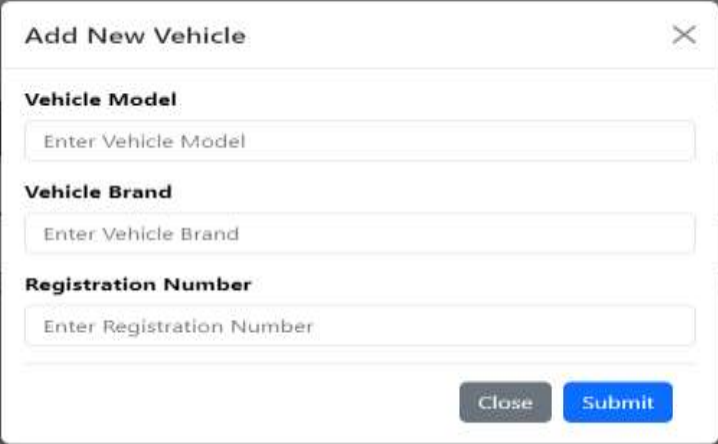
## 4. Booking

### Client

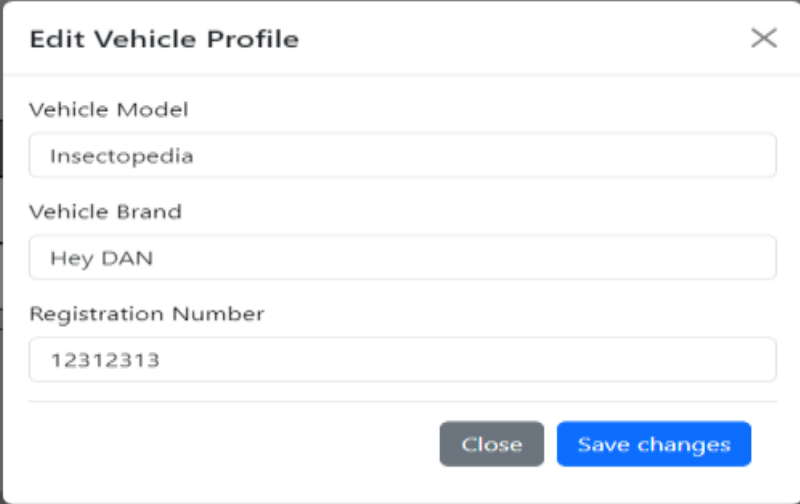
1. Once the account is logged in, you can now see and fill in the for-service request.
2. Pick desired date of your appointment for the service.
3. After you complete the details needed, click the submit button.

4. You can also register the profile of your vehicle for automated fill out for the vehicle brand, vehicle model, and registration number. Additionally, you can update, create, delete your vehicle profile.
5. Verifying prompt will pop asking for your response. *Take note that once you agreed to schedule there is no chance you can reschedule it unless you contact directly the owner of the shop.*





The image shows a modal window titled "Add New Vehicle" with a close button (X) in the top right corner. It contains three input fields: "Vehicle Model" with placeholder text "Enter Vehicle Model", "Vehicle Brand" with placeholder text "Enter Vehicle Brand", and "Registration Number" with placeholder text "Enter Registration Number". At the bottom right, there are two buttons: "Close" and "Submit".



The image shows a modal window titled "Edit Vehicle Profile" with a close button (X) in the top right corner. It contains three input fields: "Vehicle Model" with the value "Insectopedia", "Vehicle Brand" with the value "Hey DAN", and "Registration Number" with the value "12312313". At the bottom right, there are two buttons: "Close" and "Save changes".

## 6. Repair Management

### Admin

#### For Walk - Ins

1. Navigate to the "Sidebar" section of admin dashboard.
2. Click on "Walk – in".

Customer Name	Customer Name
Vehicle Model	Vehicle Model
Vehicle Brand	Vehicle Brand
Vehicle Registered Number	Vehicle Registered Number
Service Type	Service Type
Vehicle Problem	Vehicle Problem
Service Cost	Enter service cost
Labor Cost	Enter labor cost
Parts Cost	Enter parts cost
Total Cost	0.00
Assigned Mechanic	Assign Mechanic
Status	Completed
Estimated	Completed

3. Fill in the repair details, including the description of the problem, assigned mechanic, and estimated completion date.
4. Click "Submit".
5. Once the administration fills up and submits, it directly saves in reports.

## Mechanic

### Updating Repair Status

1. In the "Ongoing Job Assignment" section, you can update the overall cost, such as adding additional labor; any modifications in payment e.g., replaced parts, unpredicted problems that the mechanic encountered during the session.
2. Choose the new status (e.g., Pending, Ongoing, Reassign, and Completed).

New Status	Choose...
Remarks	

3. Click "Update".

## Completing a Repair

1. In the "Ongoing Job Assignments" section, select the repair order you want to mark as completed.
2. Verify that all details are correct and click "Update".

## Verification of Completed Services

### Admin

1. Navigate to the "Sidebar" section of admin dashboard.
2. Click the "Request" and find the "verify service requests". And click the "eye" icon in action. View and click "Verify" button, to update the request status.

- Once the verification is done, the service status will update to “Completed”.

## Viewing Repair History

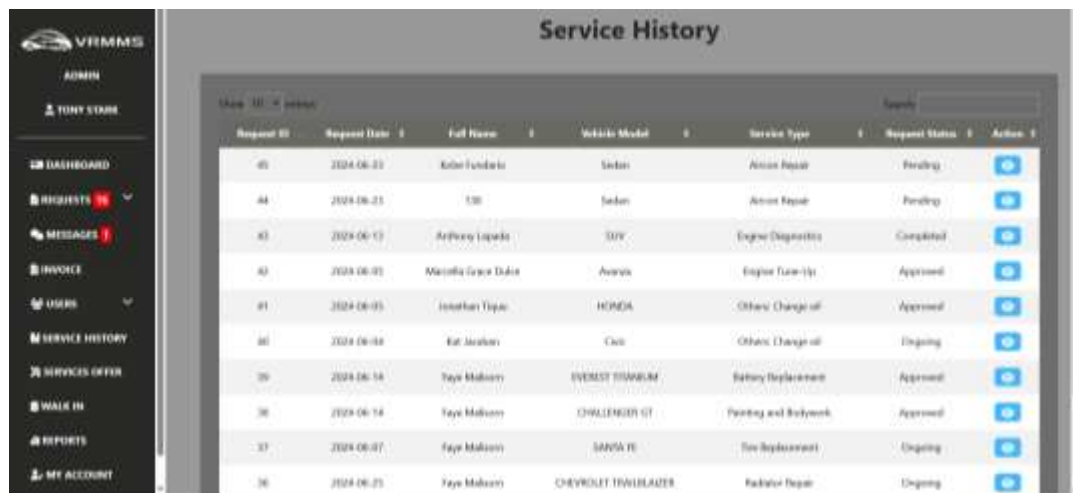
### For Clients

- Navigate to your Username right above your dashboard section.
- Click on the “my service history” tab where you can see all your transaction.
- Click on the "eye" icon to see the detailed service history of your choice.



### For Admin

- Click the “Service History”, the administration can monitor this section.



- Navigate to “Report” tab in admin’s dashboard.

Owner	Vehicle Brand	Registered Date	Registration No.	Service Type	Date Finished	Request Status	Mechanic Name	Total	Service Status
Catherine Ramulos	HONDA SUV	May 24, 2024	909	Tire Replacement	May 25, 2024	Completed	Tuan Mechanic	14250.00	Completed
Catherine Ramulos	Honda SUV	May 25, 2024	909	Accident Repair	May 26, 2024	Completed	P Mechanic	11300.00	Completed
Catherine Ramulos	Honda Civic	May 25, 2024	1116	Battery Replacement	May 26, 2024	Completed	Jack Mechanic	17700.00	Completed
Lyle Pogi Sanchez	Infiniti Toyota	May 19, 2024	124342	Wheel Alignment	May 20, 2024	Completed	Jack Mechanic	10100.00	Completed
Anne Richards Sebastian	BMW 45 BMW	May 16, 2024	AAK 124	Tire Replacement	May 27, 2024	Completed	Glenn Arnes	6000.00	Completed
Anne Richards Sebastian	BMW 7 12122 SEDAN BMW	May 27, 2024	HGR 1815	Tire Replacement	May 27, 2024	Completed	Glenn Arnes	8100.00	Completed
Catherine Ramulos	Audi Skoda	May 16, 2024	343	Engine Diagnostics	May 25, 2024	Completed	Dani Cruz	13800.00	Completed
Angie Sebastian	Honda suv	May 19, 2024	8827	Battery Replacement	May 19, 2024	Completed	Glenn Arnes	14400.00	Completed

3. Select the vehicle whose repair history you want to view. You can filter the mechanic's name or the date you desire to see.
4. Click on the "Generate Report" tab if you desire to have a printed copy or in PDF form.

Owner	Vehicle Brand	Registered Date	Registration No.	Service Type	Date Finished	Request Status	Mechanic Name	Total	Service Status
Earl Garcia	Audi Skoda	May 19, 2024	343	Engine Diagnostics	May 19, 2024	Completed	Dani Cruz	13800.00	Completed
Catherine Ramulos	Honda SUV	May 25, 2024	1116	Battery Replacement	May 26, 2024	Completed	Jack Mechanic	17700.00	Completed
Anne Richards Sebastian	BMW 45 BMW	May 16, 2024	AAK 124	Tire Replacement	May 27, 2024	Completed	Glenn Arnes	6000.00	Completed

Generated By: Tuan Rapt  
Date: 2024-05-01

## 6. Reports and Analytics

### Generating Reports

1. Navigate to the "Reports" section.

2. Select the type of report you want to generate (e.g., mechanic name).
3. Specify the date range and any other filters.
4. Click "Generate Report".

**Reports**

Mechanic Name:

From Date:  To Date:

Status:

Search:

## 7. User Management

### Admin

#### Adding a new mechanic

1. Navigate to the "Users" section.
2. Click on "mechanic".
3. Click on "Add mechanic".
4. Fill in the required information, including username, password, and role.
5. Click "Save".

**Mechanics**

Show:  entries

Mechanic ID	Full Name	Email	Address	Mobile Number	Specialization	Username	Action
1	Data Dasi	data@gmail.com	Templetonville	0903605122	Battery Replacement, Car Detailing, Engine Diagnostics, Engine Tune-Up, Exhaust System Repair, Painting and Bodywork, Radiator Repair, Tire Replacement, Wheel Alignment	Data	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
2	Class Arcoo	classarcoo25@gmail.com	New York	09637153094	Car Detailing, Radiator Repair, Tire Replacement	Arcoo	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
3	Boo Mechanic	boo@gmail.com	Vicenza, Italy	00067865432	Battery Replacement, Car Detailing, Engine Diagnostics, Engine Tune-Up, Exhaust System Repair, Painting and Bodywork, Radiator Repair, Tire Replacement, Wheel Alignment	Boo	<input type="button" value="Edit"/> <input type="button" value="Delete"/>



## Adding a new admin

1. Navigate to the "Users" section.
2. Click on "Admin".
3. Click on "Add admin".
4. Fill in the required information, including username, password, and role.
5. Click "Save".



## Editing User Information

### Admin

1. In the "Account" section, select the admin you want to edit.
2. Click the "Edit" button.
3. Update the necessary fields.
4. Click "Save".

**VRMMS**

ADMIN

STEVE ROGERS

DASHBOARD

REQUESTS 17

MESSAGES 1

INVOICE

USERS

REGISTERED USERS

MECHANICS

ADMIN

### Update Admin

**Admin Full Name**  
Steve Rogers

**Username**  
Admin

**Email**  
admin@gmail.com

**Password**  
[REDACTED]

Back Save

## Client

1. In the "Account" section, select the My Account you want to edit.
2. Click the "Edit" button.
3. Update the necessary fields.
4. Click "Save".

**VRMMS**

ADMIN

STEVE ROGERS

DASHBOARD

REQUESTS 17

MESSAGES 1

INVOICE

USERS

REGISTERED USERS

MECHANICS

ADMIN

### Update User

**Client Full Name**  
Ulye Rogi Sanchez

**Email**  
redlynor16@gmail.com

**Mobile Number**  
09760192266

**Address**  
Dyan lang sa Paraiso

**Username**  
redlynor16@gmail.com

Back Save

## Mechanic

1. In the "Account" section, select the My account you want to edit.

2. Click the "Edit" button.
3. Update the necessary fields.
4. Click "Save".

**Update Mechanic**

**Mechanic Full Name**

**Address**

**Mobile Number**

**Username**

**Email**

**Password**

**Specialization/Skills**

- ☐ Car Detailing
- ☐ Tire Replacement
- ☐ Painting and Bodywork
- ☐ Battery Replacement
- ☐ Exhaust System Repair
- ☐ Engine Diagnostics
- ☐ Wheel Alignment
- ☐ Engine Tune-Up
- ☐ Radiator Repair
- ☒ Aircon Repair

**Back** **Save**

## Deleting a User

### Admin

1. In the "Users" section, select the user you want to delete.
2. Click the "Delete" button.
3. Confirm the deletion in the pop-up dialog.

## Change Password

5. In the "User", section, select the mechanic you want to change the password.
6. Click the "Password", change it.
7. Click the "Update".

## 9. Appointing

### Admin

#### Request-Assigned

1. In the “Pending Service”, section, select the request service and fill in the required information.
2. The “Assign Mechanic” in the form table automatically select all the mechanics that same in specializations or skills that clients inquire.
3. Select the “Mechanics” fill up the other required information. Click “update”.

The screenshot shows a web form with three input fields: "Assigned Mechanic", "Due Date", and "Comment". A dropdown menu is open for the "Assigned Mechanic" field, displaying a list of mechanics and their assigned services. The list includes: "Dabi Cruz - 4 Service/s Assigned", "Bio Mechanic - 4 Service/s Assigned", "Jack Mechanic - 2 Service/s Assigned", "Than Mechanic - 4 Service/s Assigned", and "Randy Mechanic - 4 Service/s Assigned". At the bottom right of the form, there are two buttons: "Back" and "Update".

#### Request- Reassigned

### Mechanics

1. In the “Pending Service”, section, select the request service that you want to reassign.
2. In the lower part of the request “Update Service Status”, select and change it to “reassign”. Fill out the other required information.
3. Click “update” and the administration will assign this job again to other active mechanic.

## Admin

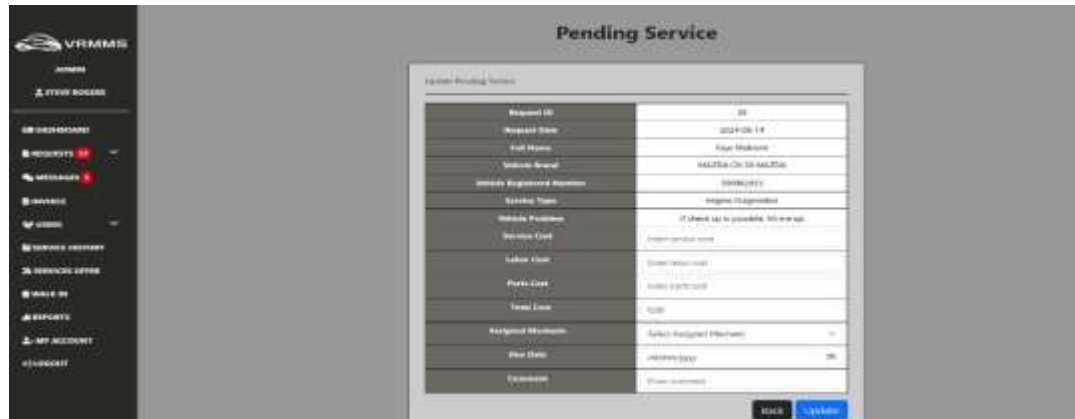
1. In the “Reassign Service”, section, select the reassign request service fill up the required information.
2. The “Assign Mechanic” in form table automatically select all the mechanics that same in specializations or skills that clients inquire.
3. Select the “Mechanics” fill up the other required information. Click “update”.

Request ID	Full Name	Vehicle Model	Service Type	Status	Due	Action
49	Khe Arceo	Mitsubishi	Car Detailing	Reassign	2024-06-15	

## 10. Billing Summary

### Admin

1. In the “Pending Service” section, select the request service that you want to update.
2. Once the administration fills up the required information. Click “update”



## Clients

4. Navigate to your Username right above your dashboard section.
5. Click on the “my service request” tab where you can see all of your transaction including the “estimated cost of the service”.
6. Click on the "eye" icon to see the detailed service request of your choice.



## 11. Settings

### Notifications

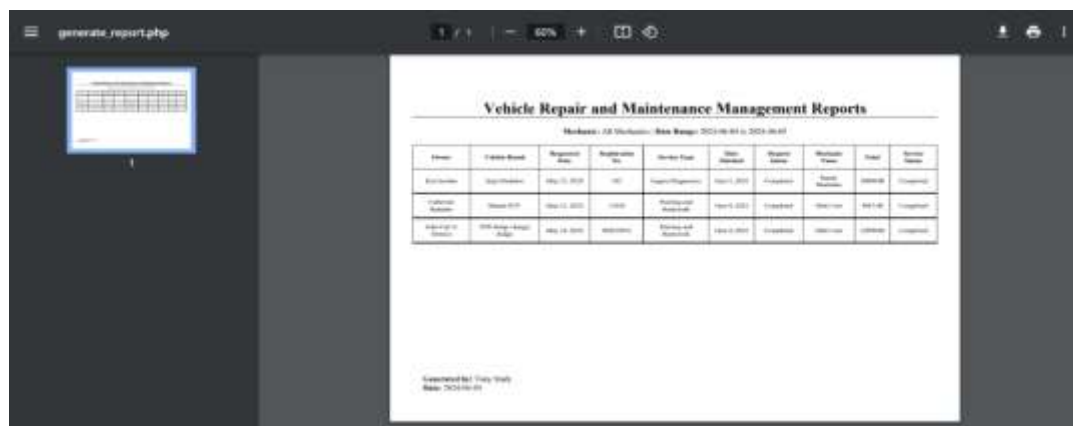
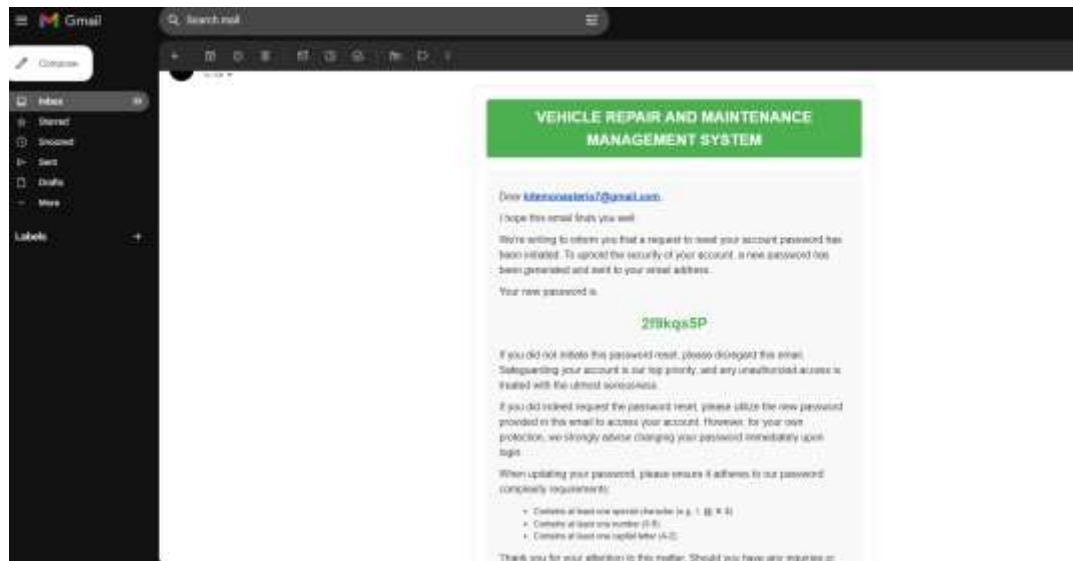
1. Navigate to the "Settings" section.
2. Select "Notifications".
3. Configure the notification preferences for different events (e.g., new repair order, scheduled maintenance).
4. Click "Save".

## 12. Troubleshooting

- **Cannot Log In:** Ensure your username and password are correct. If you forgot your password, click on "Forgot Password" to reset it.
- **System Slow or Unresponsive:** Check your internet connection and ensure your system meets the minimum requirements. Try clearing your browser cache.
- **Error Messages:** Refer to the error code in the message and contact support if the issue persists.

## 13. Frequently Asked Questions (FAQs)

**Q: How do I reset my password?** A: Click on "Forgot Password" on the login page and follow the instructions to reset your password. And wait for the email notification for new password.



**Q: Can I export data from the system?** A: Yes, you can export data from the "Reports" section in PDF format.



## 14. Contact Support

### For Clients

1. In client dashboard, click the home page
2. Find the “Contact”
3. Send your concern and question.



For additional support, please contact our support team at:

- **Email:** [vrmmsshop2024@gmail.com](mailto:vrmmsshop2024@gmail.com)
- **Live Chat:** Available on our website from 9 AM to 5 PM (PST)

**Appendices D: Data Dictionary****Table 10:** Admin Table

<b>Table Name</b>	<b>Admin</b>				
<b>Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Default</b>	<b>Constraint</b>	<b>Description</b>
admin_id	Int	11	none	Primary	Admin ID, Auto Increment
fullname	Varchar	50	none	Not null	Full name of the admin
username	Varchar	30	none	Not null	Desired username by the admin
email	Varchar	50	none	Not null	Email account of the admin
password	Varchar	255	none	Not null	Password of the admin

**Table 11:** Client Table

<b>Table Name</b>	<b>Client</b>				
<b>Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Default</b>	<b>Constraint</b>	<b>Description</b>
client_id	Int	11	none	Primary	Client ID, Auto Increment
fullname	Varchar	50	none	Not null	Full name of the client
email	Varchar	100	none	Not null	Email account of the client
mobile_number	Varchar	255	none	Not null	Mobile number of the client
address	Varchar	100	none	Not null	Address location of the client
username	Varchar	30	none	Not Null	Desired username by the client
password	Varchar	255	None	Not Null	Password of the client
verification_code	Varchar	10	Null	Null	Verification code for the registration of account
verified	Int	11	None	Not Null	Verified after the verification code is inputted

**Table 12:** Mechanic Table

<b>Table Name</b>	<b>Mechanic</b>				
<b>Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Default</b>	<b>Constraint</b>	<b>Description</b>
mechanic_id	Int	11	none	Primary	Mechanic ID, Auto Increment
fullname	Varchar	50	none	Not null	Full name of the Mechanic
email	Varchar	50	none	Not null	Email account of the Mechanic
mobile_number	Varchar	255	none	Not null	Mobile number of the Mechanic
address	Varchar	100	none	Not null	Address location of the Mechanic
username	Varchar	30	none	Not Null	Desired username by the Mechanic
password	Varchar	255	None	Not Null	Password of the Mechanic
specialization	Varchar	10	Null	Null	Specialized skill of the mechanic

**Table 13:** Message Table

<b>Table Name</b>	<b>Message</b>				
<b>Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Default</b>	<b>Constraint</b>	<b>Description</b>
message_id	Int	11	none	Primary	Message ID, Auto Increment
subject	Varchar	50	none	Not null	Subject of the message
message	Varchar	50	none	Not null	Message body from client
date	Timestsmp		current_timestamp( )	Not null	Date that the message is composed
admin_response	Varchar	100	null	null	Admin response to the client's message
client_id	Int	11	none	Foreign, Not Null	Client's ID
seen	Int	11	null	Null	If the message has

					seen by the admin
email	Varchar	50	Null	Null	Email of the client

**Table 14:** Service Offer Table

Table Name	Service_offer				
Name	Data Type	Length	Default	Constraint	Description
service_id	Int	11	none	Primary	Service ID, Auto Increment
service_name	Varchar	100	Null	null	Service name offered
description	Text		None	Not null	Description of the service offered
type	varchar	100	None	Not null	Type of service offered
status	Varchar	20	None	Not null	Status of the service
image	Varchar	200	null	Null	Picture of the service offered

**Table 15:** Service Cost Table

Table Name	Service_cost				
Name	Data Type	Length	Default	Constraint	Description
cost_id	Int	11	none	Primary	Service Cost ID, Auto Increment
service_cost	Decimal	10, 2	None	Not null	Service cost
labor_cost	Decimal	10, 2	None	Not null	Labor cost
parts_cost	Decimal	10, 2	None	Not null	Parts cost
total_cost	Decimal	10, 2	None	Not null	Total service cost
comment	Varchar	100	None	Not Null	Comment about the service
request_id	Int	11	Null	Foreign, Null	Service request ID
mechanic_id	Int	11	None	Foreign, Not null	Mechanic ID

service_status_id	Int	11	None	Foreign, Not null	Service status ID
due	Date		None	Not null	Due date of the service
extra_service_cost	Decimal	10, 2	None	Not null	Additional service cost
extra_labor_cost	Decimal	10, 2	None	Not null	Additional labor cost
extra_parts_cost	Decimal	10, 2	None	Not null	Additional parts cost
extra_total_cost	Decimal	10, 2	None	Not null	Additional total cost
final total cost	Decimal	10, 2	None	Not null	Final cost

**Table 16:** Service Request Table

<b>Table Name</b>	<b>Service_request</b>				
<b>Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Default</b>	<b>Constraint</b>	<b>Description</b>
request_id	Int	11	none	Primary	Request ID, Auto Increment
Car_model	Varchar	255	None	Not null	Car Model
Car_brand	Varchar	255	None	Not null	Car Brand
Car_reg_num	Varchar	255	None	Not null	Car Registration Number
Service_type	Varchar	255	None	Not null	Service type
Car_problem	Varchar	255	None	Not Null	Car problem
Request_date	Datetime		None	Not Null	Request date
Client_id	Varchar	255	None	Not null	Client ID
Completion_date	Date		Null	Null	Completion Date
Request_status	Int	11	None	Not null	Request Status
Remarks	Mediumtext		Null	Null	Remarks from the admin
Mechmark	Mediumtext		None	Not null	Mechanics remarks
Service_date	Date		Null	Null	Service date
notif	int	11	None	Not null	Notifications

**Table 17:** Service Status Table

<b>Table Name</b>	<b>Service status</b>				
<b>Name</b>	<b>Data Type</b>	<b>Length</b>	<b>Default</b>	<b>Constraint</b>	<b>Description</b>
service_status_id	Int	11	none	Primary	Service Cost ID, Auto Increment
service_status_name	Varchar	50	None	Not null	Service status name

## CURRICULUM VITAE


**GOZUN, ANNA MICHAELA P.**

Research and Documentation Analyst

**ABOUT ME**

Seeking to leverage academic knowledge and hands-on project experience to contribute to innovative technology solutions in a dynamic organization. Committed to continuous learning and professional development

**EDUCATION**

**Bachelor of Science in Information System**  
Technological University of the Philippines - Manila  
2020 - present

**Humanities and Social Science (HUMMS)**  
Exact Colleges of Asia - Maritime School  
2018 - 2020

**SOFT SKILLS**

Management Skills	██████████
Creativity	██████████
Adaptive	██████████
Microsoft Office	██████████
Critical Thinking	██████████
Multi-tasking	██████████

**LANGUAGE**

- English
- Filipino

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**EXPERIENCE**

○ **Metroshoppers Group** *February - June 2024*  
300 Samson Road, Elimac Building Puregold Caloocant City

- Digital Marketing Associate
- Content Creator
- Social Media Associate

○ **Student Council** *2018 - 2020*  
Exact Colleges of Asia - Maritime College

- Student Secretary - College Department

**AWARDS**

- Leadership Awardee
- Consistent Honor Student
- Dean Lister

**REFERENCES**

**May Garcia**  
Faculty I TUP - Manila

Phone: 0968-661-2221  
Email: may\_garcia@tup.edu.ph

**Peragrino B. Amador Jr.**  
Faculty I TUP - Manila

Phone: 0917-79-8890  
Email: peragrinojr\_amador@tup.edu.ph



# MALICDEM, ANTONIEL D.

Data and Documentation Analyst

## ABOUT ME

Aspiring Information Systems graduate with a strong foundation in database management, system analysis, and software development. Seeking a challenging entry-level position to leverage technical skills and knowledge in a dynamic environment, contributing to innovative solutions and organizational success.

## EDUCATION

**Bachelor of Science in Information System**  
Technological University of the Philippines - Manila  
2020 - present

**Humanities and Social Science (HUMMS)**  
Logro High School - Senior High  
2018 - 2020

## SKILLS

Management Skills

Creativity

Microsoft Office

Canva

Critical Thinking

Communication Skills

## LANGUAGE

- English
- Filipino

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✉️ anton.demesal7@gmail.com

## EXPERIENCE

- **Elmido Law Office** 2023  
3 East Ave. Corner Edsa Brgy. Pinyahan Quezon City  
• Encoder (Part-Time)
- **Familylife Christiam School Inc.** 2019  
Blk. 2 Lot 8 Kalap Dr., Kalap Subdivision, Brgy. 177 Maligaya Camarin Caloocan City, Quezon City  
• Intern Teacher (Elementary Department)

## AWARDS

- Leadership Awardee
- Consistent Honor Student
- President / Dean Lister

## REFERENCES

**John Michael Villena**  
Call Center Agent  
Phone: 0975-282-0374

**Bailey Dupont**  
Call Center Agent  
Phone: 0918-722-7994





## NANGCAS, CHAISKA R.

Research and Documentation Analyst

### ABOUT ME

Detailed - oriented Information System student eager to prove and apply its academic knowledge and practical skills in a professional setting. Contribute to the development, implementation, and optimization of system while growing my expertise in a collaborative and innovative environment.

### EDUCATION

**Bachelor of Science in Information System**  
Technological University of the Philippines - Manila  
2020 - present

**Information and Communication Technology (TVL - ICT)**  
Tinajeros National High School - SHS  
2018 - 2020

### SKILLS

Management Skills

Creativity

Microsoft Office

Canva

Critical Thinking

Communication Skills

### LANGUAGE

- English
- Filipino

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### EXPERIENCE

- **Metroshoppers Group** *March - May 2024*  
300 Samson Road, Elimac Building Puregold Caloocan City
  - IT Technical Associate
  - Encoder in Accounting Department
  - Computer Maintenance Associate
  - Data Analyst
- **Lordced Computer Repair Services** *2020 - present*  
19b Dizon St., Tinajeros Malabon City
  - Graphic Editor
  - Customer Assistance
  - Computer Technician

### AWARDS

- Consistent Academic Achiever
- President / Dean Lister
- TESDA NCII Animation Holder

### REFERENCES

**Mark Joseph Samarita**  
Senior High Teacher  
Phone: 0925-730-7457

**Rhea B. Volante**  
Business Owner | Lordced  
Phone: 015-432-4842



# PONCE, KEMJHON C.

Programmer

## ABOUT ME

Dedicated and detailed - oriented soon - to - be graduate with a background in Information System. Eager to fill a spot into the IT world and apply skills in designing, implementing, and optimizing databases and enthusiastic to contribute to data management projects and gain practical experience in database administration.

## EDUCATION

**Bachelor of Science in Information System**  
Technological University of the Philippines - Manila  
2020 - present

**Home Economics (TVL - HE)**  
Las Piñas City National Senior High School  
2018 - 2020

## SKILLS

Management Skills	██████████
Database Management	██████████
Microsoft Office	██████████
Programming	██████████
Critical Thinking	██████████
Communication Skills	██████████

## LANGUAGE

- English
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## EXPERIENCE

- **Civicom Pacific Corp.** March - June 2024  
Uninail Center 1222 Acacia Ave. Ayala Alabang Muntinlupa 1780
  - Information Sec Compliance
  - Internship
- **Straive (formerly known as SPI Global)** 2023  
SPI global building, pascor Dr, parañaque 1700
  - Call Center Agent
  - Costumer Service Representative

## AWARDS

- LearnSQL.com: Certificate of Competency (2024)
- LearnSQL.com: Certificate of Completion SWL Basic Course (2024)
- SoloLearn: Certification in Introduction to SQL Course (2023)
- SoloLearn: Certification SQL Intermediate Course (2023)

## REFERENCES



# RAMALES, CATHERINE J.

Programmer

## ABOUT ME

To refine my skill set while contributing meaningfully to a company that fosters my professional growth and career advancement. As a beginner in this field, I am adaptable and eager to learn, and I'm willing to embrace new skills and knowledge to become a great asset to the company.

## EDUCATION

**Bachelor of Science in Information System**  
Technological University of the Philippines - Manila  
2020 - present

**General Academic Strand (GAS)**

SACATA High School  
2018 - 2020

## SKILLS

Computer Literate	██████████
Database Management	██████████
Microsoft Office	██████████
Programming	██████████
Critical Thinking	██████████
Communication Skills	██████████

## LANGUAGE

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## EXPERIENCE

### ○ **Staunch Workforce Corporation** *March - June 2024*

2F, Rhodium Square Building, 1659 E. Rodriguez Sr. Ave.  
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- IT Technical Support in IT Department

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- Graphic Editor
- Customer Assistance
- Computer Technician

## CERTIFICATION

- NCII of Computer System Servicing
- Navigating the path for a better Access in the Future of Software Development Seminar

## REFERENCES

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IT Team Leader

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### Appendix F

## THESIS GRAMMARIAN CERTIFICATION

This is to certify that the thesis entitled,

VEHICLE REPAIR AND MAINTENANCE MANAGEMENT SYSTEM

authored by

Anna Michaela P. Gozun

Antoniell D. Malicdem

Chaiska R. Nangcas

Kemjhon C. Ponce

Catherine J. Rames

has undergone editing and proofreading by the undersigned.

This Certification is being issued upon the request of Anna Michaela P. Gozun, Antoniell D. Malicdem, Chaiska R. Nangcas, Kemjhon C. Ponce, Catherine J. Rames for whatever purpose this may serve them.


  
 Prof. Marilyn M. Ignacio

Grammarian

Technological University of the Philippines

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This is to certify that the manuscript entitled

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authored by

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