



Sri Lanka Institute of Information Technology

# Automobile Shop Management System

Project Proposal (IT2080)

Information Technology Project (IT2080)

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## INTRODUCTION

Gallage Motors is one of the leading automobile service stations in Sri Lanka. The main service here is repairing common rail injectors. other than that company provides sells vehicles, spare parts, and vehicle maintenance services. The project aims to streamline the services and internal administration of the organization. The enormous amount of time taken to store and retrieve the data has negatively affected the company. Their current system doesn't provide the security that they expected. current UI exciting doesn't meet the requirement of a modern UI/UX experience.

The purpose of choosing an online web application is to overcome problems more efficiently. This project is an essential system for customers as it enables the company to offer accelerated service to their customers, expand their business and streamline corporate internal administration.

## **PROBLEM STATEMENT AND DISSICULTIES**

### **1.Difficult to provide warranty certificate.**

Currently, they're using an already printed template for warranty certificates. so, they entered details into these printed templates and excel sheets. because of that their waste so much time and resources.

### **2.Difficult to find buyers for sell vehicles.**

Daily vehicle selling percentage is very low. Because the vehicles are displayed only to the customers who come to the shop. And also, a problem for consumers to spend a lot of time on the manual system currently in use to express their preferred price for a vehicle.

### **3. Difficulty in managing corporate employees.**

Due to the large amount of space required for the existing employee information files maintained by the company, great efforts have been made to keep those files safe. And also, difficult to calculate OT hours, leaves and no pay leaves. Therefore, setting the employee's monthly salary is also a difficult task.

### **4. The inconvenience to customers who come to get maintenance services.**

Customers who come to the company to get maintenance services have to spend a lot of time in vain. This has also led to a reduction in customer attendance. Employees are also under a lot of pressure due to the large number of customers coming at once.

### **5. Lack of a system for customers to submit ideas and suggestions about themselves.**

Customer feedback is an essential component of improving corporate services and increasing efficiency. Therefore, the lack of a system to get customer feedback has had a negative impact on the company's development.

## **6. Problems when selling spare parts and keeping track of the stock.**

Customers who come to buy spare parts have to wait in long queues and employees have to spend more time fulfilling one customer's orders. At present the monthly requirement for stockpiling cannot be accurately calculated as spare parts sales data are not stored systematically.

## **7. Problems with not keeping transaction records.**

One of the major problems facing the company today is the inability to properly provide income and expenditure statements in banking due to non-maintenance of records for all transactions.

When issuing bills for transactions, employees have to make great efforts to keep copies of them and to retrieve them when needed.

## **8. Problem with Keep track of the vehicle maintenance information.**

One of the company's major problems today is the difficulty of obtaining information on previously completed maintenance, managing and keeping track of those details using the current manual system.

## SOLUTIONS

- **Warranty issue management**

Maintain a database for data storage and generate a pdf via an online web application to provide a hard copy of the warranty. Manage all the warranty claims.

- **Vehicle sales management**

Post vehicle ads through an online web application so that any customer can view vehicle advertisements online.

- **Employee management**

This is expected to manage employee attendance and basic employee details.

- **Online reservation management**

This function will handle all the online customer reservations. It also will facilitate the booking of vehicle maintenance.

- **Customer care management**

This allows customers to connect with the company, give feedback, and rate their services.

- **Spare parts management**

its aims to manage spare part stock and supply genuine products to customers.

- **Finance management**

Introducing a financial management function to keep track of the revenue and expenditure of the organization. And also issue a bill for all the provided services.

- **Maintain management**

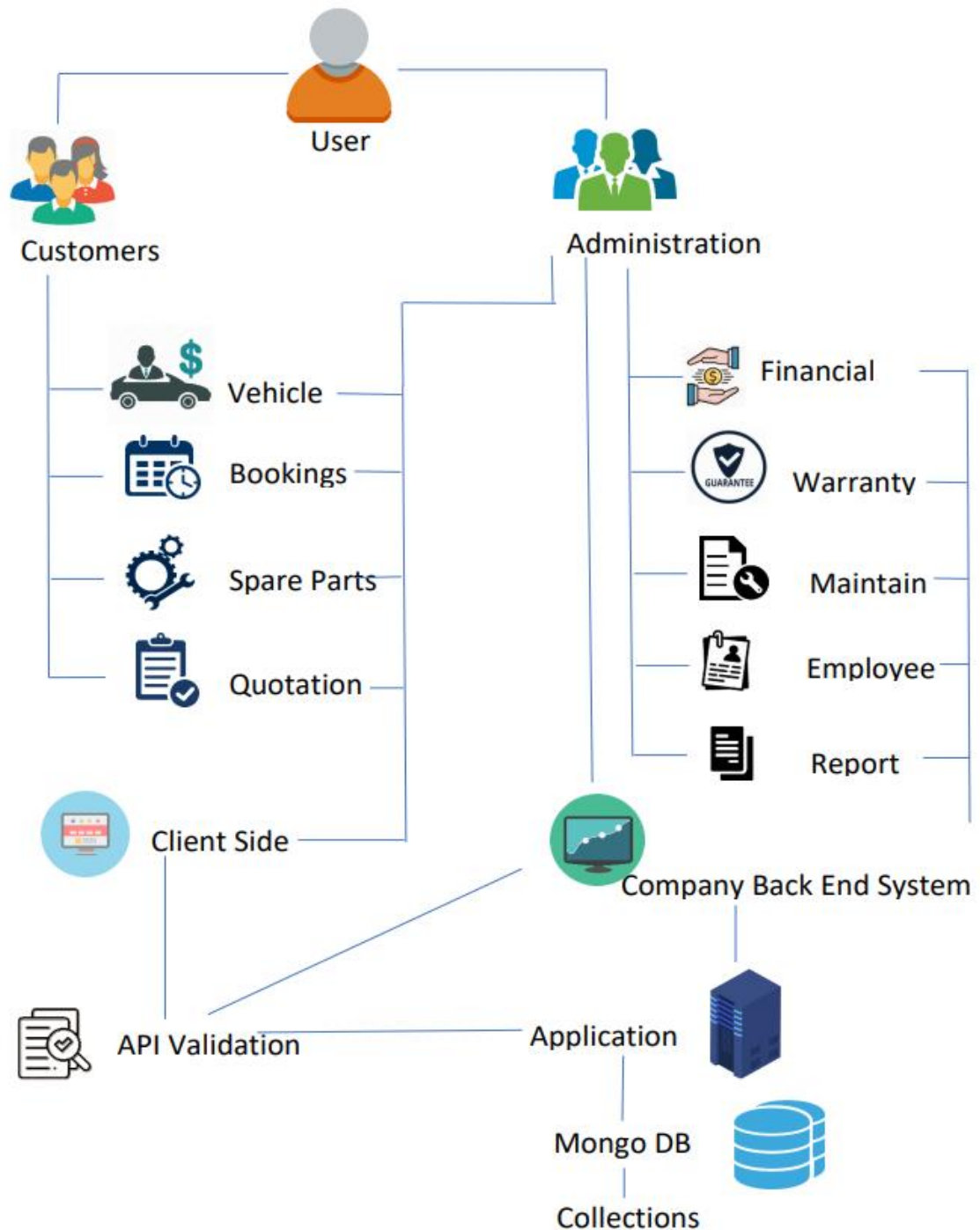
In this function handle, all the company's vehicle maintenances happen through online reservation and offline.

## **BENEFITS**

- Save efforts and time.
- Reduce cost of the users.
- Easy to access the system from anywhere through any device.
- User friendly.
- Can Keep track of employee performance and attendance records.
- Can improve maintenance services by viewing customer feedbacks.
- It doesn't require human efforts to calculate employee salary, daily purchases, monthly profit details.
- Enhanced the security.

# SYSTEM OVERVIEW DIAGRAM

## AUTOMOBILE SHOP MANAGEMENT SYSTEM





This diagram demonstrates an overview of the Automobile Shop Management System which has been suggested to the company by our team. As shown in Figure; there are two main end-users of this system Customers and Administrators/Managers. All the end-users can obtain their main objectives easily by using this system as indicated by the Figure. Mainly, there are eight functions Vehicle sales management, Employee management, Warranty issue management, Online reservation management, Customer care management, Spare parts management, Finance management, and Maintain management. As the main role of the system, the Administrator has privileges to manage all the functionalities and generate several kinds of reports which are useful to improve the efficiency of the services and profits.

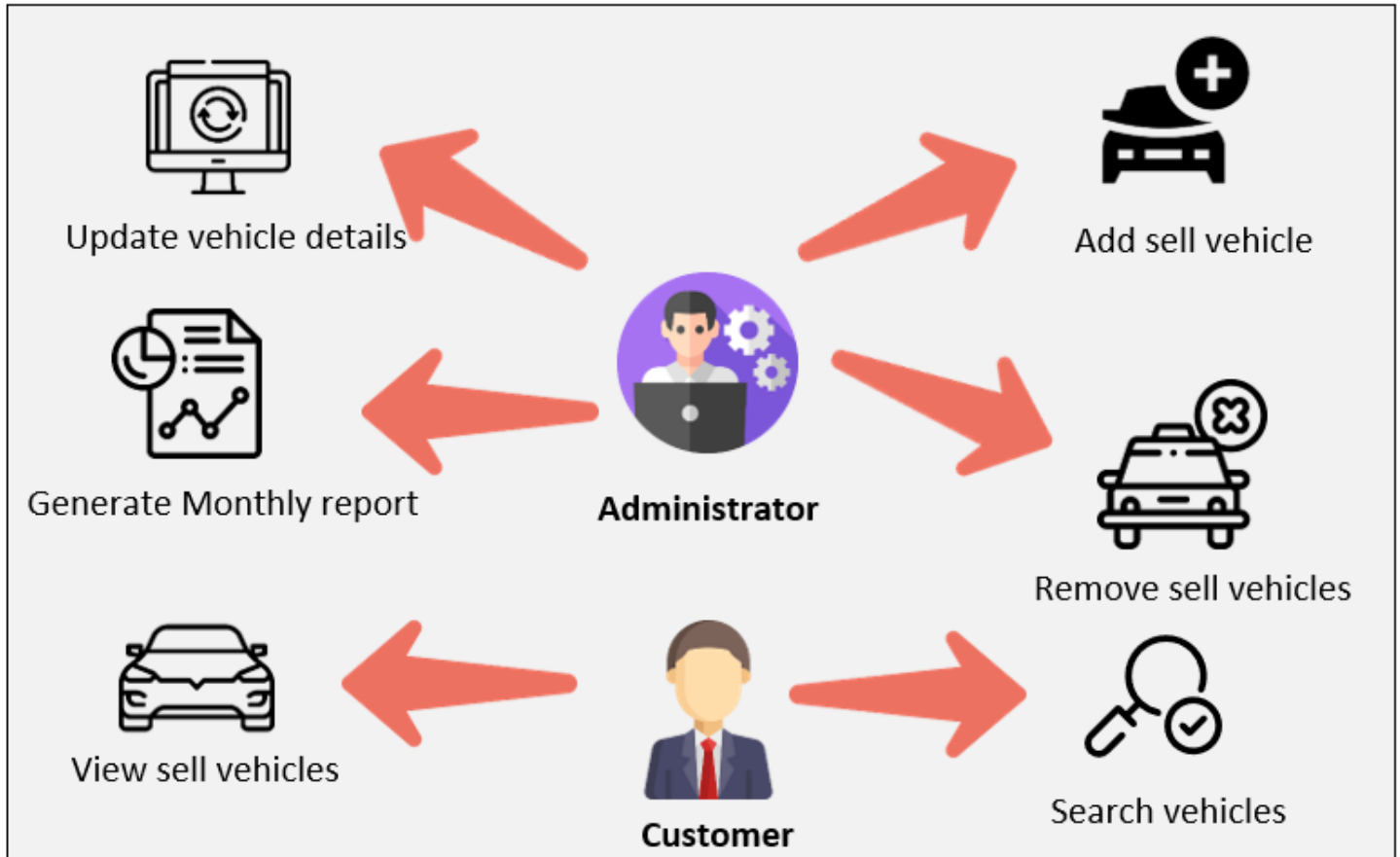
There 3 main sections in the system. Those sections are Frontend, Backend, and Database.

The front end provides an interface for users to interact with the system.

Backend gets the data that end-users provided using the front end and validates those details using the API validation system. After validation, API will be interacting with the database and do the crud operations according to requests if the database forwards data into the front-end API will take those details and route data to each front-end interface.

## SYSTEM FUNCTIONS IN DETAILS

### Vehicles sales management

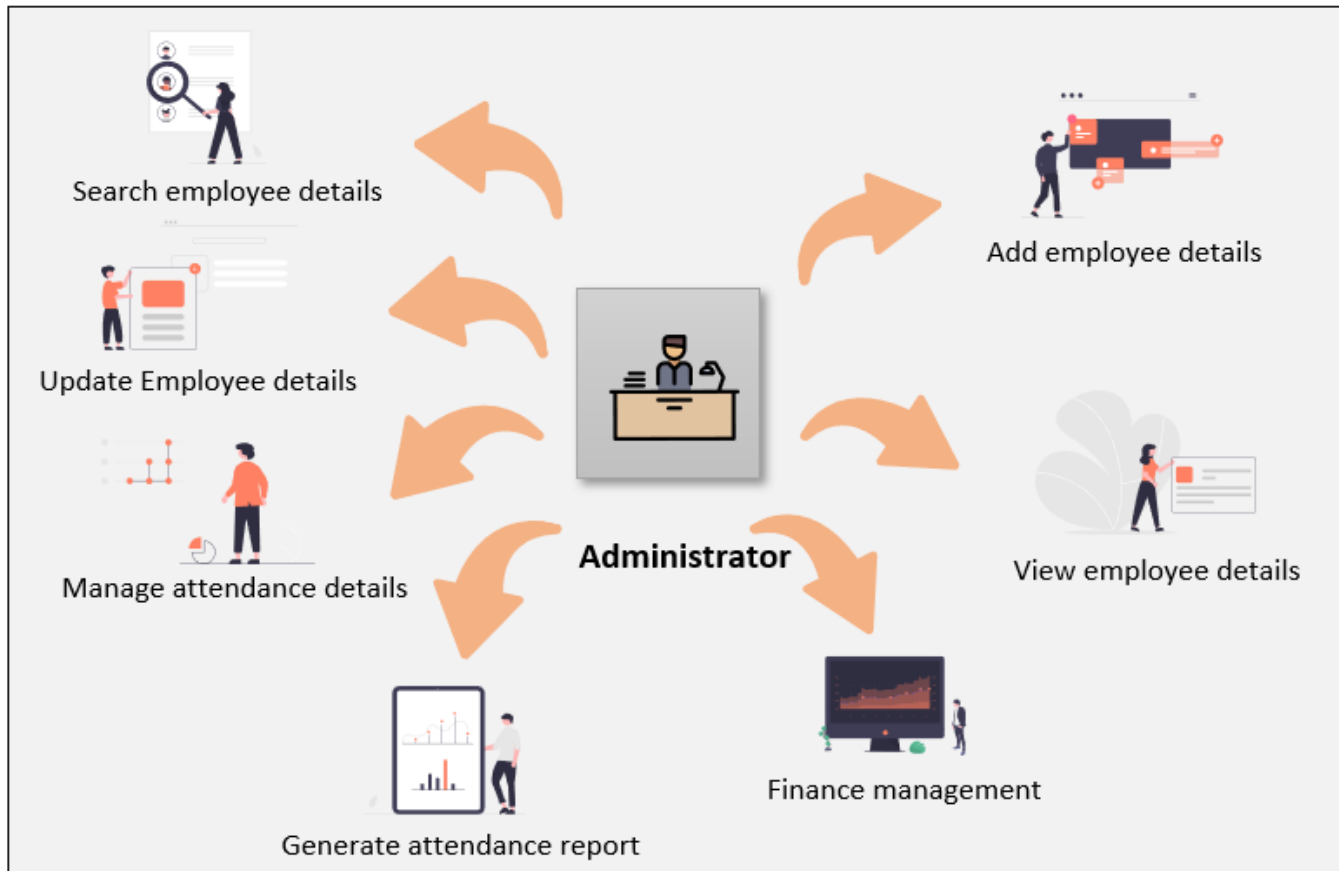


In this function, the admin can enter used vehicles into the store. Customers can send buyer requests to the system and customers can also put a bid to selected vehicles in the store. Used vehicles are resold through the betting system, where the vehicle is sold to the highest bidder. Here the vehicle information is entered by the admin and that information is shown to the customers. Customers will be able to change their bids and requests through the profile

Here the admin can create, update and delete this information. Customers will be able to bet on the vehicle only after registering in the system.

The admin will retrieve the customer's name, contact number, email and date of purchase, and will compile a monthly report based on that information. These sell details send to the financial management system.

## Employee management

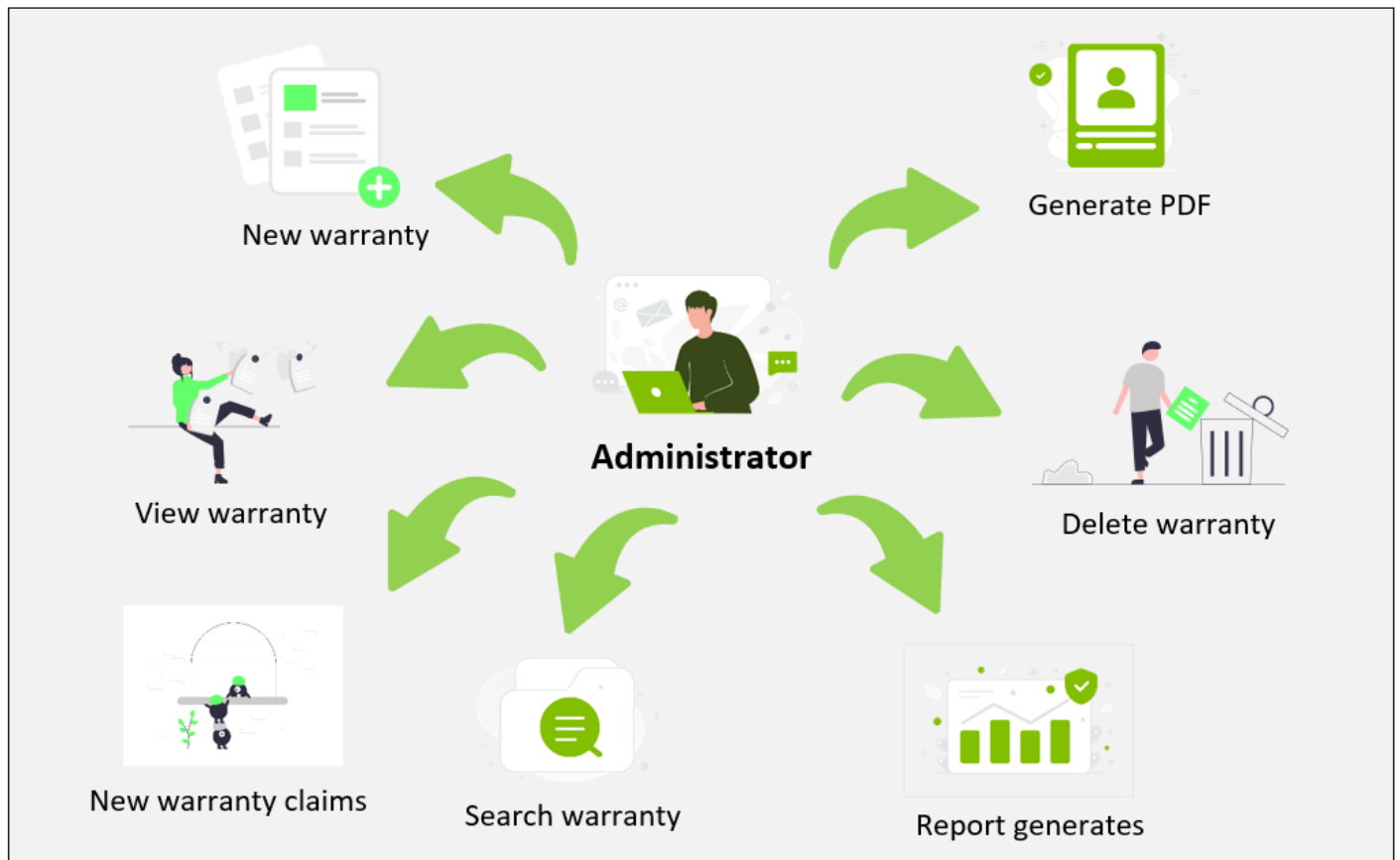


Employees are the central part of the company. The company's progress depends on the efficiency of employees. So, the employee management department must have an effective information system. This function automates employee-related tasks.

Admin will also be able to add employee details such as employee name, employee NIC, employee address, employee job role, etc. Employee details can be too. Admin can search employee details using provided interface, and update & delete functionalities can be done. Admin can calculate paid leaves unpaid leaves using employee attendances and insert those details into the system.

At the end of the month, the admin can generate a monthly report using attendance and its forward to finance management. Using the report admin can get an idea about employee attendance.

## Warranty issue management

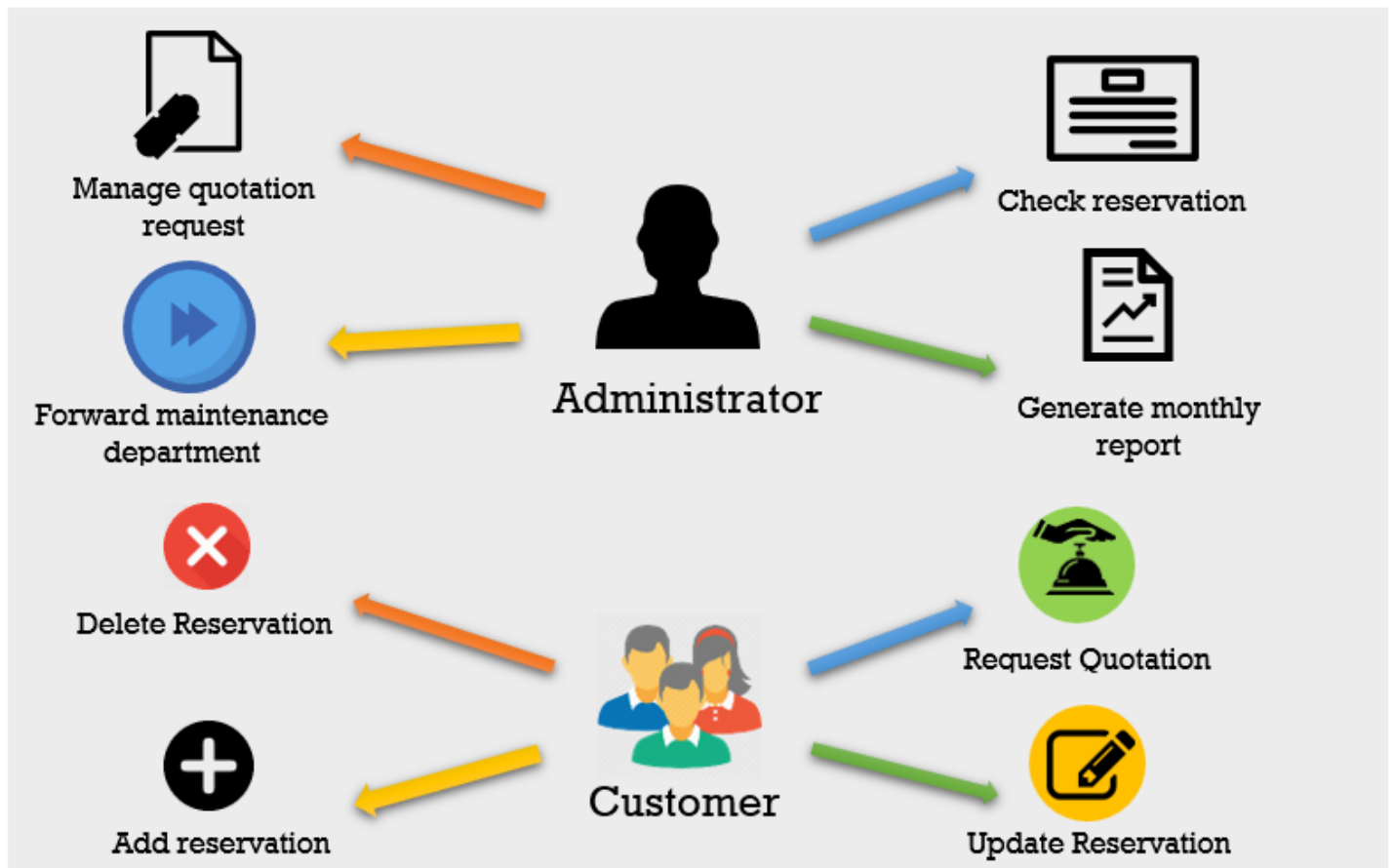


According to the warranty management system, as shown in the figure administrator can issue a new warranty for each injector customer bought using the system. Admin can insert customer details, technician details, injector details, etc., into the system when issuing the new warranty. Admin can update the warranty deadline using the system. If the warranty has already expired, then only the admin will be able to delete the warranty from the system.

This main function has another function to manage all warranty claims details. Admin and insert warranty details, technician's details, and reasons for warranty claims into the system. Admin can also delete updates those details from the system.

At each end of the month, the admin can generate a report on all the warranty claims within the month. Using the report admin will be able to know which type of injectors mostly claim the warranties and any common problem that occurs in the injectors. Admin will be able to search the warranty details and warranty claims details using the system.

## Reservation management



These days all the companies try to provide their services through online systems because it helps the company to give a brilliant service to their customers. Also, it increases efficiency and reduces wasting time.

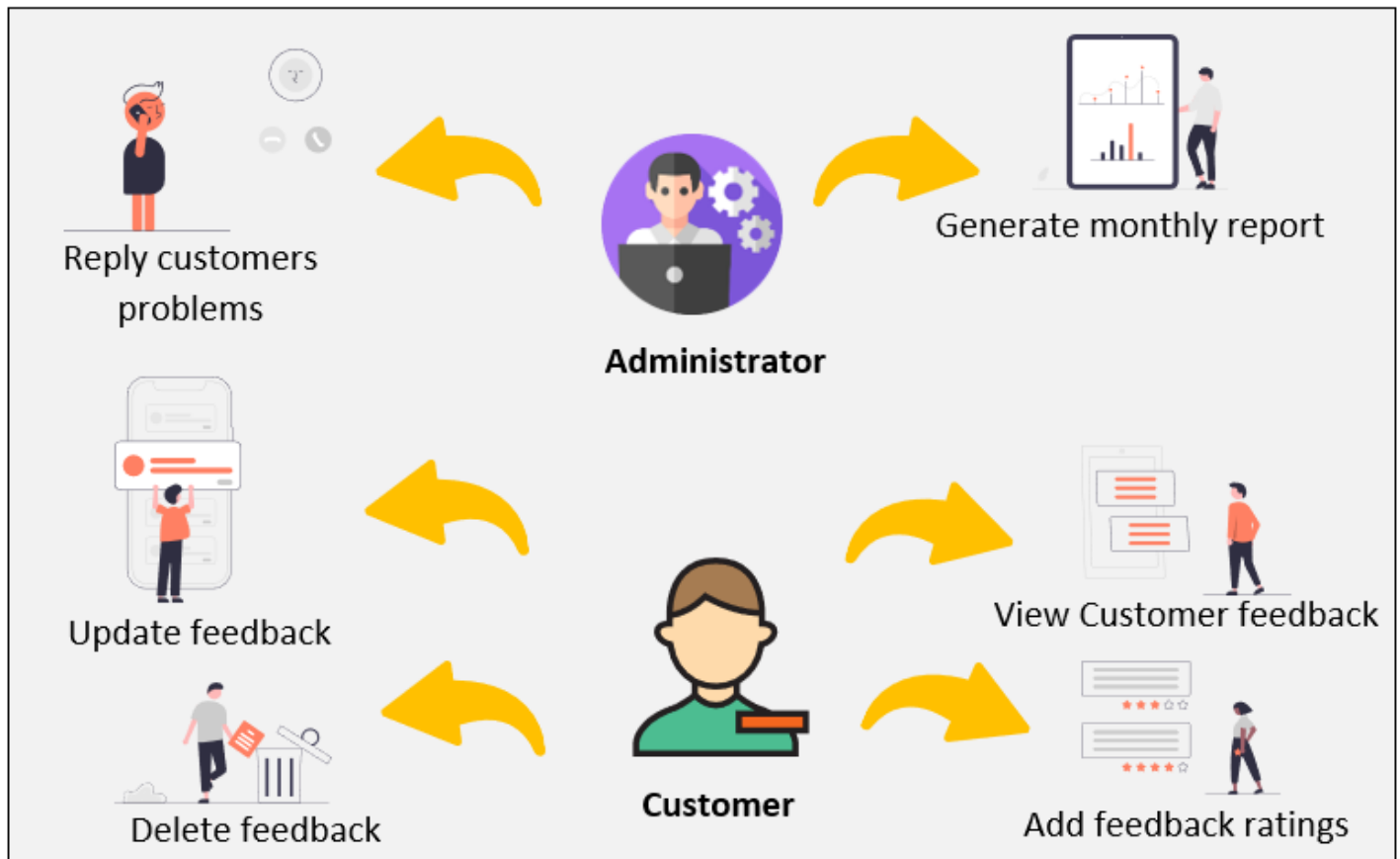
Through this function, customers can reserve time to get their services like warranty claims, general repairs, free checkups, and request maintenance quotations by using the provided interface. And customers are able to update and delete their reservations.

When admin reserve a customer's reservation, he or she can view all the reservations through the provided interfaces. Admin will be able to send conformation details on reservation via e mails which has taken from user profile. Admin forwards the reservation details to maintains department too.

Finally, Admin can generate a report having an analysis on reservations throughout the month.

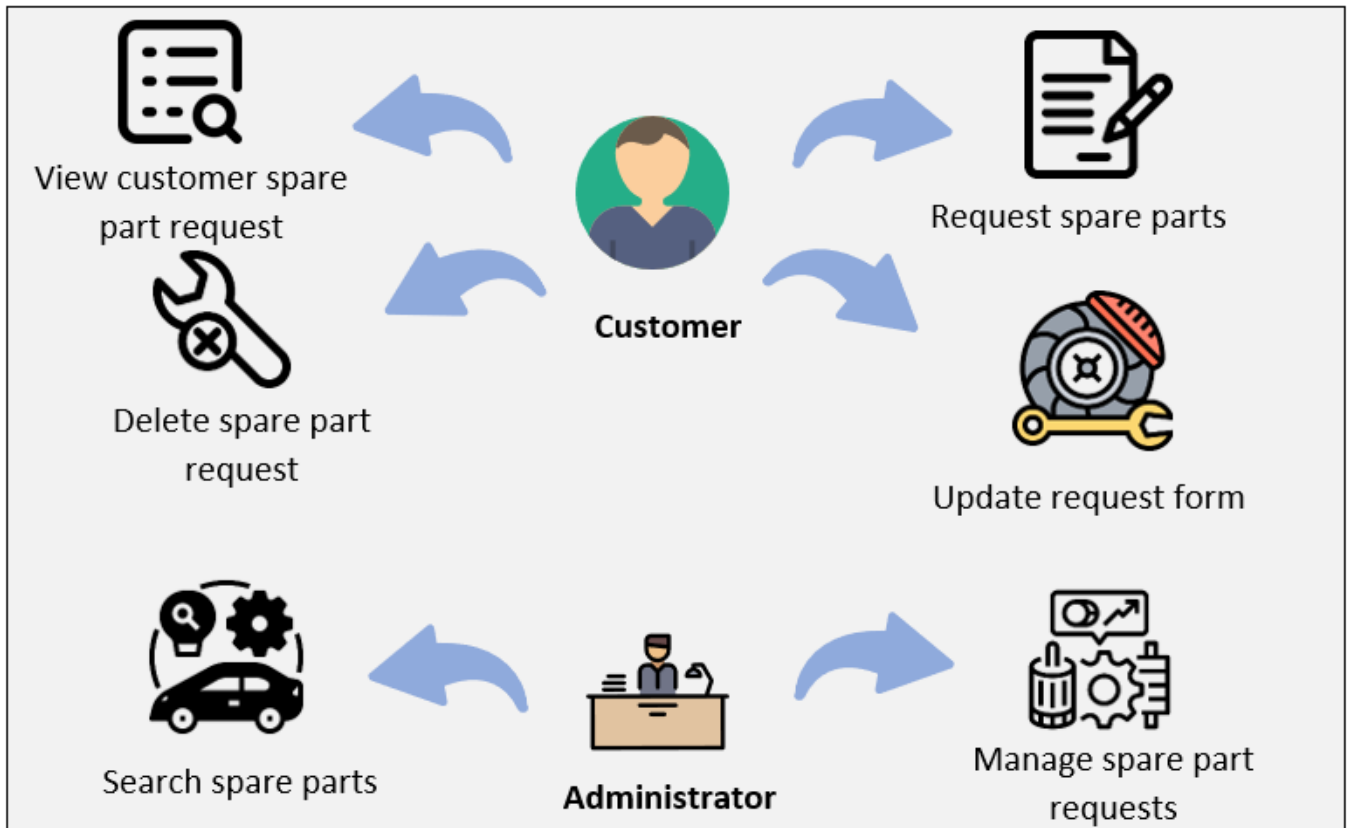


## Customer care management



Gallage motors company is an automobile company with a significant customer base and high reputation. Mainly, this function is responsible for managing customer feedback and ratings. Initially, every customer should create an account by providing their details, such as name, email, username, contact number, password, etc. each authorized customer can make feedback and rating about the company service. if the customer needs to change their feedback and ratings they can update or delete them through the user profile. Admin can view all the feedback and ratings given by customers. at the end of the month, the admin can generate a report using customer feedback. using the report admin can improve the services.

## Spare parts management

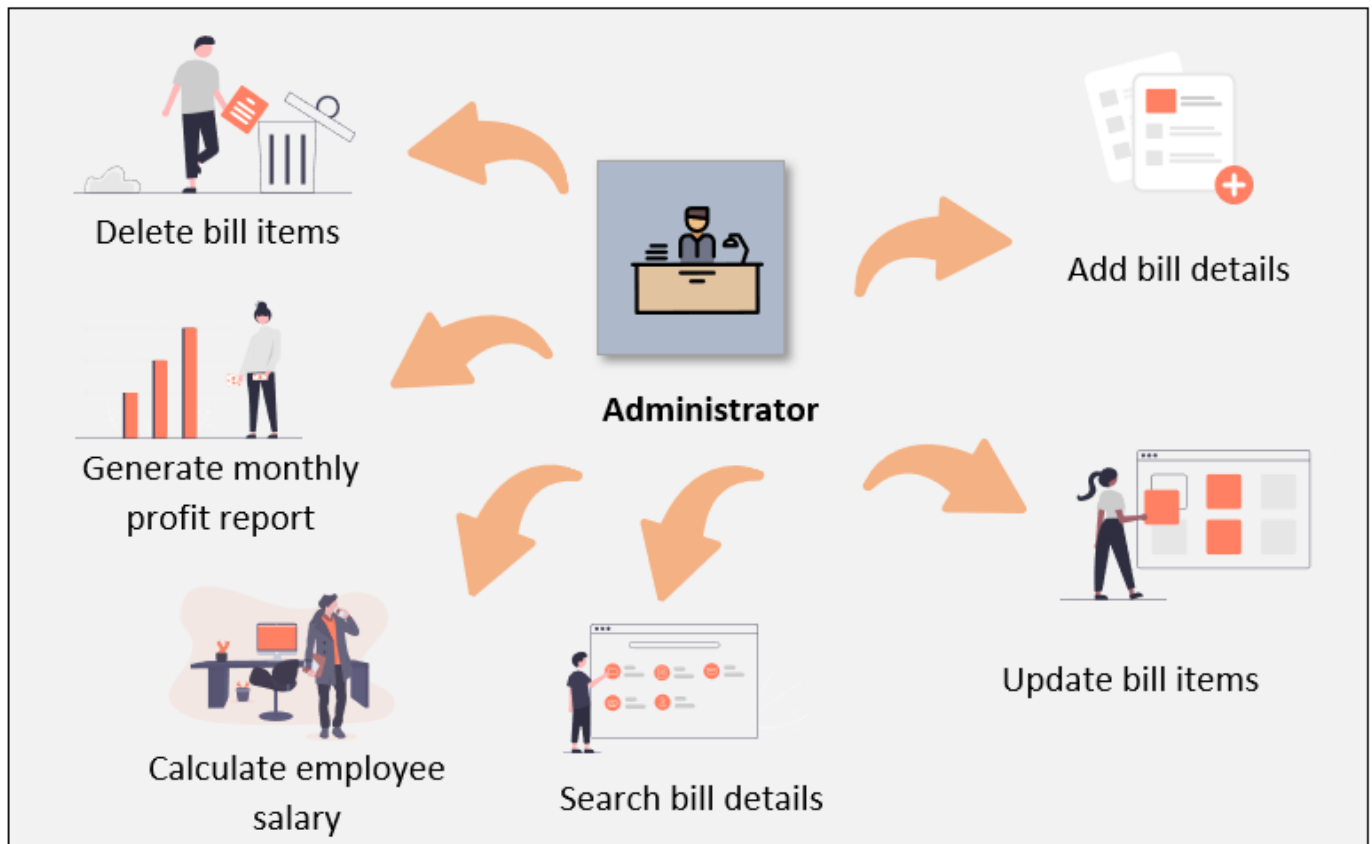


Spare parts management is an important part of the automobile management system. When the users visit the spare part shop section, they will see a list of spare part products available. If they want to buy them, they can request a quotation from the system so the admin can deliver the products to them. Admin can manage the company inventory stocks.

- **Create:** - After login, admins can add new stocks to the system. An admin can add new spare parts products into the system. Also, he can add new items to the store as well.
- **Update:** -The admin can update the price, name, and quantity of a specific product in the spare parts.

- Delete: -when, the admin, accesses the admin panel, he can also delete the spare parts products and previously generated reports.
- Read: -Admin can View Spare parts details through the admin panel.
- Search-Admin can search spare parts details through the admin panel.
- Report-Admin can create a report based on the buying and selling activities on the shop using the system database.

## Finance management



This system monitors and controls Galle motors' income, expenditure, and assets to maximize profits and ensure sustainability.

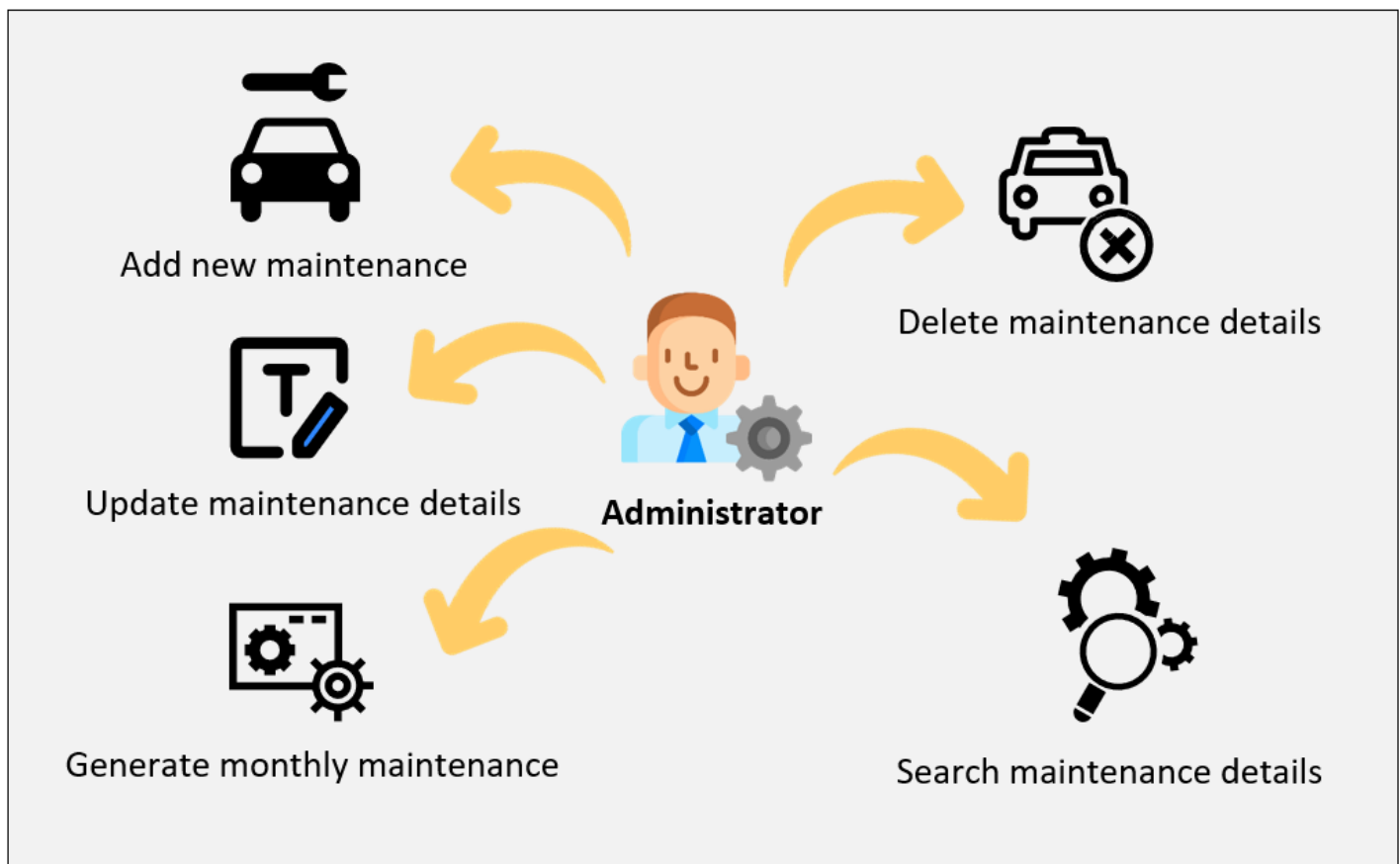
This involves formalizing the issuance of bills, calculating employee salaries, and calculating the company's profit. The financial management system was created as a solution to all these problems.

When calculating wages, the monthly gross salary of each employee is calculated. There the employee calculates the monthly salary and basic pay, overtime, and allowances based on the number of days worked. The employee management system obtains all this data of the employees, and this data is stored.

After entering the code number of the item purchased during bill processing, the item's price will be added to the bill, and the bill will be processed with

all other additions. The customer will receive a copy, and the data will be stored in the database. The difference between all these receipts and expenses can be used to calculate the company's daily and monthly profit, and the graphical representation of the data gives an idea of the company's growth. All this data can only be edited, modified, and deleted by the admin.

## Maintain management



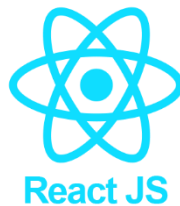
In this function, the admin can enter all the vehicle maintenance details into the system. Before the company start maintenance on a vehicle, there will be an inspection of the vehicle and those details also enter into the system.

A vehicle maintenance record is a historical record of the condition and repair of a single-vehicle. Their admin can get an idea of previous maintenance when re-repairing the vehicle. The notes are collected and the estimated cost of the repair is noted. admin will be able to assign technicians, update, delete maintenances details. Admin can search maintenance and inspections details using provided interface.

admin can generate a monthly report about all the completed maintenances and report about the current state of the vehicle.

## Tools And Technologies

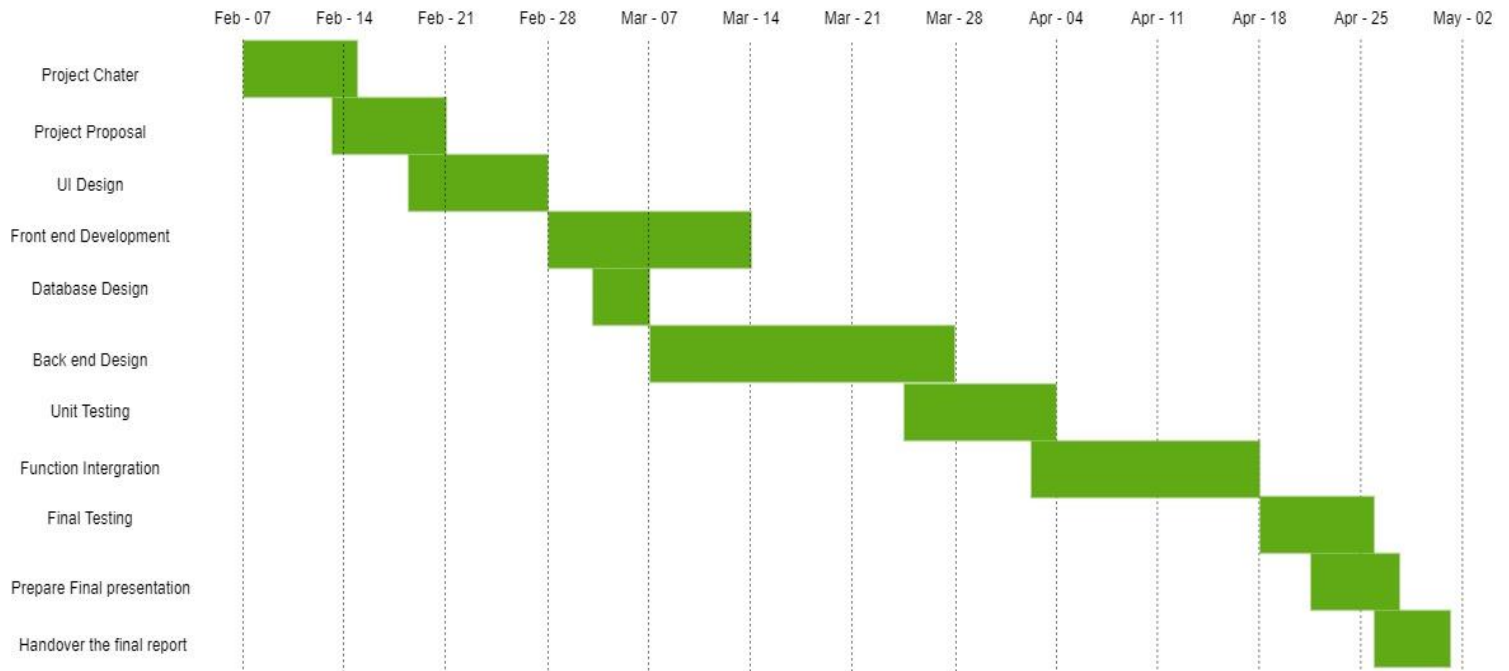
- React js - React is the JavaScript framework that we use to develop the front end of the web application.
- Node js - we use NodeJS as our backend JavaScript runtime environment.
- Express js - express js is the framework that we use to develop the backend API of the application.
- MongoDB - MongoDB is the database program used for our web application.
- Github - GitHub platform will be used for version control and collaboration with members.
- ReduxTool - redux tool used for manage state in the web application.
- Firebase Storage - firebase storage used for uploading files and images.



Express



# PROJECT MANAGEMENT PLAN





## WORK DISTRIBUTION

IT Number and Name	Work Distribution
<b>IT20299620</b> <b>Kumara K.V.Y.S</b>	<b>Vehicle Sale Management Function</b> <ul style="list-style-type: none"><li>• User interface development</li><li>• Back-end development</li><li>• Implementing the related create, update, retrieve and delete function</li><li>• Creating the database</li><li>• Generating the report</li><li>• Vehicle sale page creation</li></ul>
<b>IT20610616</b> <b>Madushanka H.M.A</b>	<b>Employee Management Function</b> <ul style="list-style-type: none"><li>• User interface development</li><li>• Back-end development</li><li>• Implementing the related create, update, retrieve and delete function</li><li>• Creating the database</li><li>• Generating the report</li><li>• User profile page creation</li></ul>

IT Number and Name	Work Distribution
<b>IT20611910</b> <b>Madhuranga B.D.H</b>	<b>Warranty Management Function</b> <ul style="list-style-type: none"> <li>• User interface development</li> <li>• Back-end development</li> <li>• Implementing the related create, update, retrieve and delete function</li> <li>• Creating the database</li> <li>• Generating the report</li> <li>• Login Management</li> </ul>
<b>IT20600334</b> <b>Withanage P.W.E.L</b>	<b>Online Reservation Management Function</b> <ul style="list-style-type: none"> <li>• User interface development</li> <li>• Back-end development</li> <li>• Implementing the related create, update, retrieve and delete function</li> <li>• Creating the database</li> <li>• Generating the report</li> <li>• Dashboard page creation</li> </ul>

IT Number and Name	Work Distribution
<b>IT20107246</b> <b>Dilshan K.S.S</b>	<b>Customer Care Management Function</b> <ul style="list-style-type: none"> <li>• User interface development</li> <li>• Back-end development</li> <li>• Implementing the related create, update, retrieve and delete function</li> <li>• Creating the database</li> <li>• Generating the report</li> </ul>
<b>IT20603472</b> <b>Ashen A.V.S</b>	<b>Finance Management Function</b> <ul style="list-style-type: none"> <li>• User interface development</li> <li>• Back-end development</li> <li>• Implementing the related create, update, retrieve and delete function</li> <li>• Creating the database</li> <li>• Generating the report</li> <li>• Spare parts selling page creation</li> </ul>

IT Number and Name	Work Distribution
<b>IT20604462</b> <b>Karunathilaka A.G.G.N</b>	<b>Spare Parts Management Function</b> <ul style="list-style-type: none"> <li>• User interface development</li> <li>• Back-end development</li> <li>• Implementing the related create, update, retrieve and delete function</li> <li>• Creating the database</li> <li>• Generating the report</li> <li>• Home page creation</li> </ul>
<b>IT20126056</b> <b>Lakshana W.N.R.A.S</b>	<b>Maintain Management Function</b> <ul style="list-style-type: none"> <li>• User interface development</li> <li>• Back-end development</li> <li>• Implementing the related create, update, retrieve and delete function</li> <li>• Creating the database</li> <li>• Generating the report</li> <li>• Quotation page creation</li> </ul>

## Appendix

**GALLAGE MOTORS (PVT) LTD, DAMBULLA. 0663 142 301**

**WARRANTY CERTIFICATE** for a repaired Common Rail Injector

Name -	Date of repair -
Contact no -	Warranty until -
Address -	Technician -
Vehicle -	Contact no -
Reg. no -	Address -

Engine Code - *		No. 1
Injector Make - *		
Injector No - *		
Injector Code - *		

New parts used - *		No. 2

The injector stated above is repaired with new parts mentioned in the box No.2 and calibrated to meet Manufacturer's specifications. After the repair work, we have electronically tested it to confirm that it is in perfect condition.

We will cover this injector with **3 MONTHS WARRANTY** for all our new parts and our repair work.

**Warranty void if,**    \* Dismantle the injector    \* Electrical fault    \* Use of bad Diesel  
                                  \* Wrong installation

ඉහත සඳහන් ඉන්ජෙක්ටරය අංක 2 කොටුකර පදනමේ සහිත කොටස් භාවිත කර ඇති බවට අපගේ විද්‍යාඥයන් විවිධ අවස්ථා සහ පරීක්ෂණ මගින් සහතික කර ඇත. ඉන්ජෙක්ටරය නිවැරදිව පවතින බවට අප විසින් විද්‍යාත්මකව පරීක්ෂා කර ඇති බවට අපගේ විද්‍යාඥයන් විවිධ අවස්ථා සහ පරීක්ෂණ මගින් සහතික කර ඇත.

අපගේ සියලුම සහ කොටස් සහ ඉන්ජෙක්ටරය සංස්කරණය/කේරාති සඳහා ඕනෑම විට වෙනස්විය හැකි බවට අපගේ විද්‍යාඥයන් විවිධ අවස්ථා සහ පරීක්ෂණ මගින් සහතික කර ඇත.

එමෙන්ම අපගේ වසර තුළදී - ඉන්ජෙක්ටරය සංස්කරණය, ඉන්ජෙක්ටරයේ කේරාති, ඉන්ජෙක්ටරයේ විද්‍යාත්මක පරීක්ෂණ, විද්‍යාත්මක පරීක්ෂණ සහ විවිධ.

Signature of technician -

## GALLAGE MOTORS (PVT) LTD

### Diesel Injection Repair Service

**ඩීසල් ඉන්ජෙක්ටර් නැව් පුරුනුවේ සේවාව**

**0662284433**

**Anuradhapura Road, DAMBULLA**

Invoice No. 0261

Invoice No. 0261

Date 01-01-1970

**Customer**

Walk-In Customer

#	Product	Quantity	Unit Price	Subtotal
1	Chamber Washer (KDH) 2mm , Rajnish	4 Pc(s)	45.00	180.00
2	DN0SD356 Dimo Batta , BOSCH	2 Pc(s)	2,550.00	5,100.00
3	Chamber Dimo Batta , Flag	2 Pc(s)	50.00	100.00
<b>Subtotal:</b>				<b>Rs 5,380.00</b>

Authorized Signatory

TOTAL:

Rs 5,380.00

MECHANICAL AND COMMON RAIL INJECTOR/ PUMP REPAIR, SPARE PARTS.