



GARAGE MANAGEMENT SYSTEM

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Introduction:

A Garage Management System is a type of software designed specifically to help garage owners and managers run their businesses more efficiently. Think of it as your digital assistant that helps you keep everything organized— from customer records to inventory and financial reports.

A garage management system is a software application designed to help owners and managers streamline day-to-day operations and improve overall efficiency. The project focuses on automating manual tasks, tracking key data, and improving communication. It can be developed as a web-based, desktop, or mobile application.

1. Customer and vehicle management

- Customer registration: Store detailed customer profiles, including contact information, address, and vehicle history.
- Vehicle profiles: Maintain a record for each vehicle, including its make, model, license plate, colour, and comprehensive service history.
- Service reminders: Automatically notify customers when their vehicle is due for its next service, based on past service dates or mileage.

Appointment and job card management:

Appointment booking: Enable staff to schedule, rescheduled and manage customer appointments. The system should also support online booking for customers.

Job card creation: Automatically generate job cards with customer and vehicle details when a car arrives. This card tracks the entire repair process.

Job status tracking: Allow staff and customers to track the real-time progress of a vehicle's service or repair through various stages like "inspected," "in service," and "completed".

Inventory and parts management:

Stock tracking: Monitor spare parts and tool levels in real-time. The system should automatically deduct parts from inventory as they are used in a job.

Low stock alerts: Automatically send notifications when stock levels for a particular part fall below a pre-set threshold, enabling staff to reorder in a timely manner.

Parts requisition: Allow mechanics to request parts directly from a job card, which notifies the inventory manager to pull the items.

Billing and invoicing

- Quotation generation: Quickly create detailed and professional quotations for services and parts, based on the mechanic's inspection report.
- Invoice creation: Generate detailed, tax-compliant invoices automatically upon job completion. These invoices can itemize parts, labour costs, and other charges.
- Payment processing: Integrate with online payment gateways to enable customers to pay securely.

Employee and reporting features

- Role-based access: Set up different user roles (e.g., admin, manager, receptionist, mechanic) with specific permissions to ensure data security.
- Timesheets: Track the time mechanics spend on each job for accurate labour cost calculation and performance analysis.
- Performance reports: Generate reports on garage performance, service trends, and stock usage to help managers make data-driven decisions.

IDEATION PHASE:

A Garage Management System (GMS) ideation space focuses on innovative features and integrations beyond the core functionalities (scheduling, inventory, invoicing) to enhance efficiency, customer experience, and business intelligence in modern automotive workshops.

Core Functional Modules (Baseline)

- Appointment & Scheduling Management: Online booking, real-time calendar views, automated reminders (SMS/Email/WhatsApp), and capacity planning.
- Job Card & Workflow Management: Digital job cards, multi-point inspection checklists, task assignment to technicians, real-time job status tracking, and digital customer approvals for estimates/repairs.
- Customer Relationship Management (CRM): Centralized customer and vehicle history database, automated service reminders (e.g., for oil changes), loyalty programs, and integrated feedback collection.
- Billing & Financial Management: Automated, tax-compliant invoicing, support for multiple payment methods, expense tracking, and integration with accounting software (e.g., QuickBooks, Xero).
- Inventory & Parts Management: Real-time stock tracking, low-stock alerts, automated reordering from suppliers, barcode scanning, and parts usage analysis.
- Reports & Analytics: Dashboards for key performance indicators (KPIs), financial reports, technician performance

tracking, and service trend analysis.

- Employee/Staff Management: Employee registration, attendance tracking, workload management, and performance monitoring.

PROJECT PLANNING PHASE:

Initiation:

Define project scope, objectives (e.g., streamline operations, improve customer service), identify stakeholders, and perform a feasibility study.

Planning:

Requirement Analysis:

Detail functional (e.g., vehicle check-in/out, service scheduling, inventory management, billing) and non-functional requirements (e.g., security, performance, usability).

Project Design: Architect the system, including database design, user interface/experience (UI/UX) design, and module breakdown.

Resource Planning: Allocate personnel, technology, and budget.

Scheduling: Create a timeline and define milestones.

Risk Management: Identify potential risks and plan mitigation strategies.

Execution:

Develop the system based on the design, including coding, database implementation, and integration of various modules.

Monitoring and Control:

Track progress against the plan, manage changes, and ensure quality throughout development.

Closure:

Deploy the system, conduct user training, hand over documentation, and perform a post-implementation review.

PROJECT DESIGN PHASE:

The design space encompasses the architectural choices and technical decisions made for the system. This includes:

Architecture:

Client-server, web-based, mobile application, or a hybrid approach.

Technology Stack:

Programming languages (e.g., Python, Java, C#), frameworks (e.g., Django, Spring Boot, .NET), database systems (e.g., SQL, NoSQL), and cloud platforms.

User Interface (UI) and User Experience (UX):

Designing intuitive interfaces for different user roles (e.g.,

mechanics, administrators, customers).

Security Design:

Implementing authentication, authorization, data encryption, and access control.

Integration Points:

Designing for integration with other systems (e.g., payment gateways, external inventory systems).

Requirement Analysis:

- This phase involves gathering, documenting, and validating the needs of the garage management system. Key aspects include:

- Functional Requirements:
- Vehicle and customer management.

Service scheduling and tracking.

- Inventory management for parts and supplies.
- Invoice generation and payment processing.
- Reporting and analytics.
- Non-Functional Requirements:
- Performance: Response times, throughput, scalability.
- Security: Data protection, access control.
- Usability: Ease of use for all stakeholders.
- Reliability: System uptime and error handling.
- Maintainability: Ease of updates and bug fixes.

Performance Testing:

Performance testing evaluates the system's responsiveness, stability, and scalability under various loads. This includes:

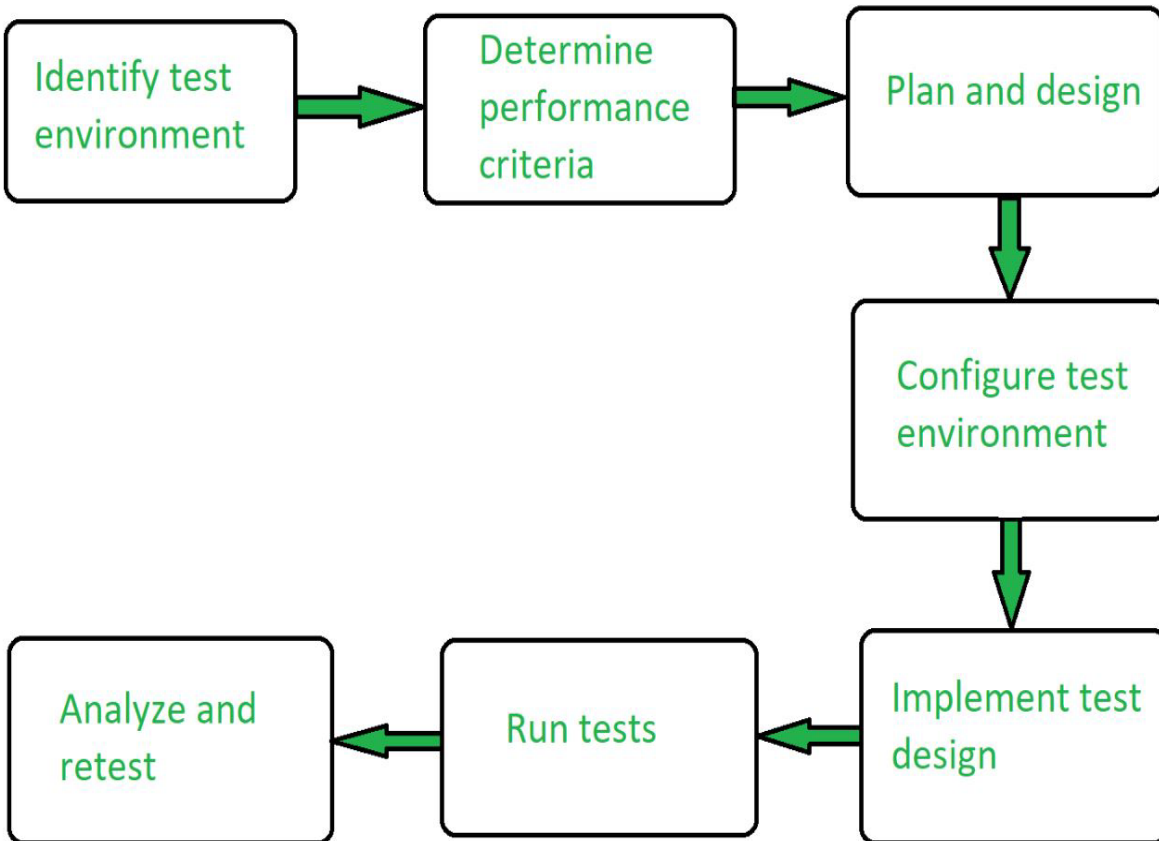
Load Testing: Assessing system behaviour under expected user load.

Stress Testing: Determining system limits by pushing it beyond normal operating conditions.

Scalability Testing: Evaluating the system's ability to handle increasing user numbers or data volumes.

Endurance Testing: Checking for performance degradation over extended periods of time.

- Spike Testing: Analyzing system response to sudden, large increases in load.
- Dive deeper in AI Mode
- AI responses may include mistakes.



Development: Set up the development environment, including a local server (e.g., XAMPP) and a code editor
Develop the backend API to handle requests from the frontend and interact with the database
Develop the frontend interface, creating the user-facing dashboards and forms.

Testing and quality assurance:

Perform unit testing to verify the functionality of

individual components.

Conduct integration testing to ensure that different modules work together correctly.

Deployment: Deploy the web application to a hosting environment so it can be accessed by users.

Maintenance and support: Continue to provide bug fixes, updates, and technical support after deployment.

FUTURESCOPE:

The future scope of a garage management system (GMS) involves expanding its functionality with emerging technologies like artificial intelligence (AI), the Internet of Things (IoT), and mobile integration. These advancements will enable garages to transition from reactive service models to proactive, predictive ones, enhancing efficiency, customer satisfaction, and profitability.

Integration with emerging technologies

Artificial intelligence (AI) and machine learning (ML)

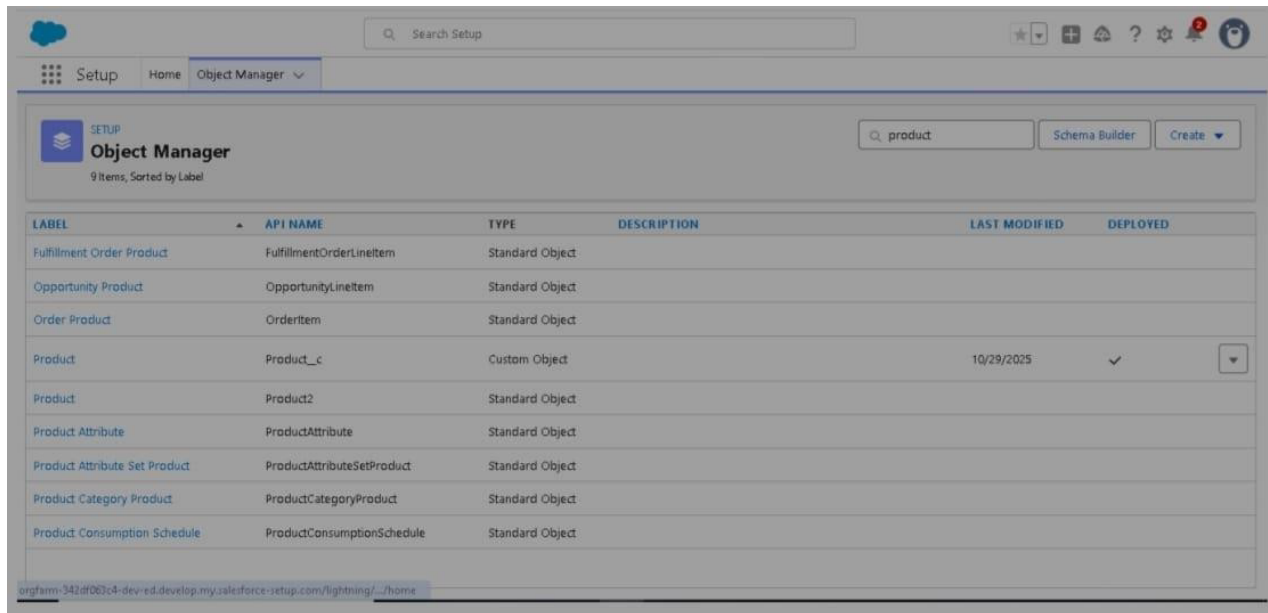
Predictive maintenance: AI and ML algorithms can analyze data from a vehicle's onboard sensors (via OBD-II integration) and service history to predict when a component might fail. This allows the system to proactively schedule maintenance, which reduces the risk of breakdowns and lowers costs for customers.

Smart job assignment: AI can optimize a mechanic's workload by automatically assigning tasks based on their workload, past performance, and expertise.

AI-powered diagnostics: For complex repairs, the system could provide instant diagnostic suggestions to technicians by analysing the vehicle's sensor data and comparing it with a vast database of known issues.

The Login Form Design of the Garage Management System:

The automobile industry is one of the most important industries in the world. It is responsible for generating a lot of revenue and creating jobs. The automobile industry is going through a transformation phase, which will result in significant changes to the way cars are sold and used.



. The automotive industry has been changing rapidly over the past few decades, with new technologies, new business models, and new regulations coming into play. This has resulted in a number of challenges for all stakeholders involved with this sector: car manufacturers; car dealers; consumers; government agencies that regulate vehicle safety standards; and software companies that develop automobile software (e.g., navigation systems). As such, there are many areas where automotive technology can be applied to improve productivity or efficiency: autonomous driving systems (e.g., self-driving cars);

The Billing Form Design of Garage Management Software:

This software is meant for the owners of garages who

are thinking about making their workshop repair service center computerized This software is meant for the owners of garages who are thinking about making their workshop repair service center computerized.

This software is meant for the owners of garages who are thinking about making their workshop repair service center computerized. This software can be installed easily on your computer and laptop without any installation issues only they must have knowledge of the basic configuration of PHP project. The advantage of this software is that it comes with both modes i.e cloud-based infrastructure or you can This software is meant for the owners of garages who are thinking about making their workshop repair service center computerized. This software can be installed easily on your computer and laptop without any installation issues only they must have knowledge of the basic configuration use with offline i.e localhost that helps you to use it offline without any internet connection.





SETUP Tabs

Visualforce tabs allow you to embed Visualforce pages. Lightning Component tabs allow you to add Lightning components to the navigation menu in Lightning Experience and the mobile app.  Lightning Page tabs allow you to add Lightning Pages to Lightning Experience and the mobile app.

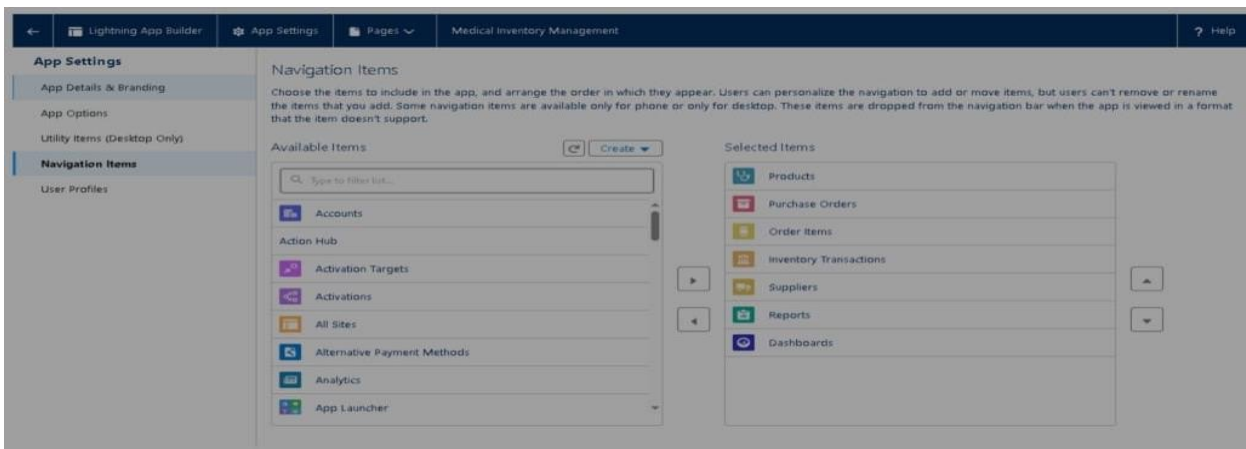
Custom Object Tabs

[New](#) [What Is This?](#)

Action	Label	Tab Style	Description
Edit Del	Inventory Transactions	 Blank	
Edit Del	Order Items	 Can	
Edit Del	Products	 Stethoscope	
Edit Del	Purchase Orders	 Box	
Edit Del	Suppliers	 Truck	

- Garage management software is a very useful tool to optimize the process of managing your workshop. In this Workshop management software, we can see Garage Management Software (GMS) working. GMS is used by garage owners and garage managers to manage their workshops in a more efficient way. It is also used by companies that want to increase their productivity.

Garage Management System Modules



- Admin: This module shall have the login details of users..
- Service: This module shall hold the data regarding

the service of vehicles done in the garage. It shall have the type of vehicle, engine number etc. details customer.

Inventory: This module shall have the data about the inventory of vehicle spares in the garage.

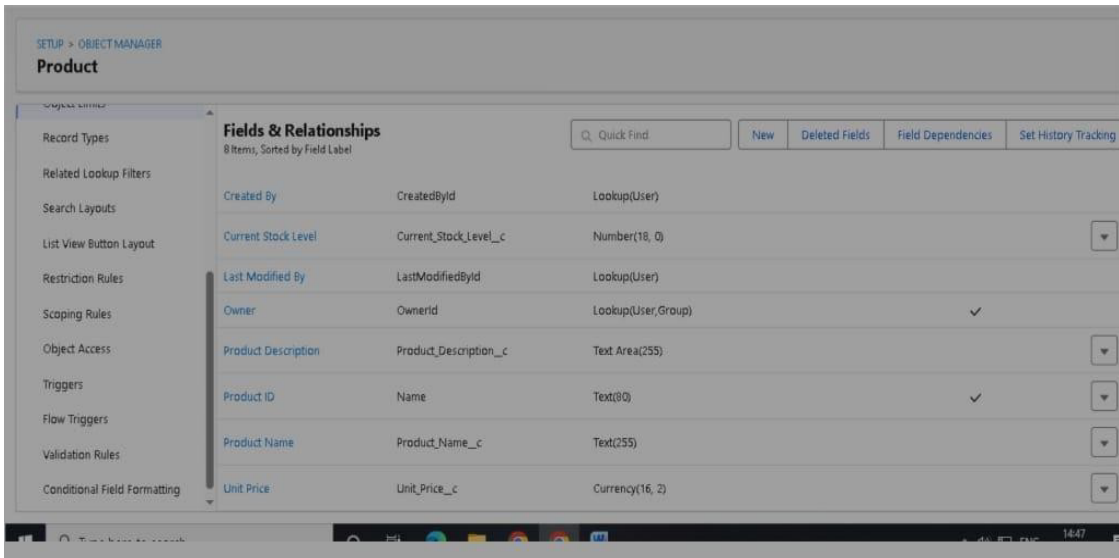
Hardware configuration:

- Processor Pentium IV
- RAM 256 MB
- Monitor 15 inch
- Hard disk 40 G
- Floppy drive 1.44 MB
- Key board Standard

Software configuration

- PHP
- Java script
- MySQL

Benefits of garage management system:



Garage management software is a software solution designed for garage and workshop owners to streamline their operations and manage their workflow efficiently. With the help of garage management software, garage owners can easily manage their customers, vehicles, inventory, and employees, among other things. This software offers various benefits that can help businesses save time and money and productivity.

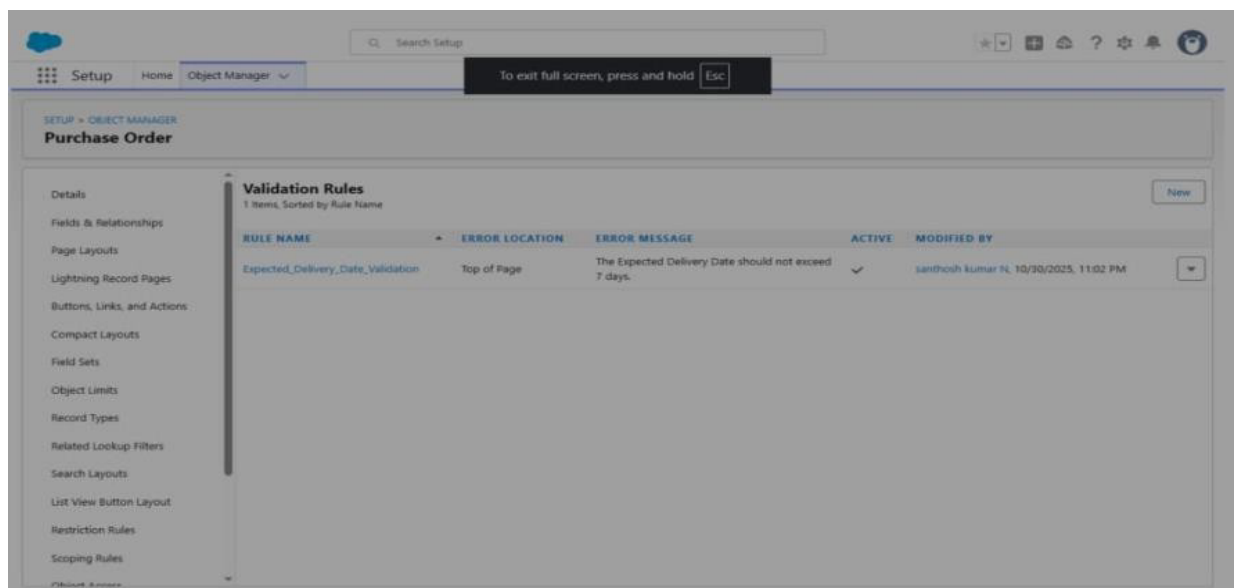
Advantages of Garage Management Software for Your Business

A garage management system offers various benefits to businesses. Some of these benefits include:

Increased productivity growth:

With the help of garage management software, businesses can increase their productivity growth. This software offers various features that can help businesses automate their processes and reduce manual labor. For instance, garage owners can easily manage their customers, vehicles, and inventory through a centralized platform. This can help them save time and increase productivity.

1.



According to a study by McKinsey, automation can help businesses save up to 20% of their time, which can be used to focus on other important tasks.

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- Streamlined Garage Processes

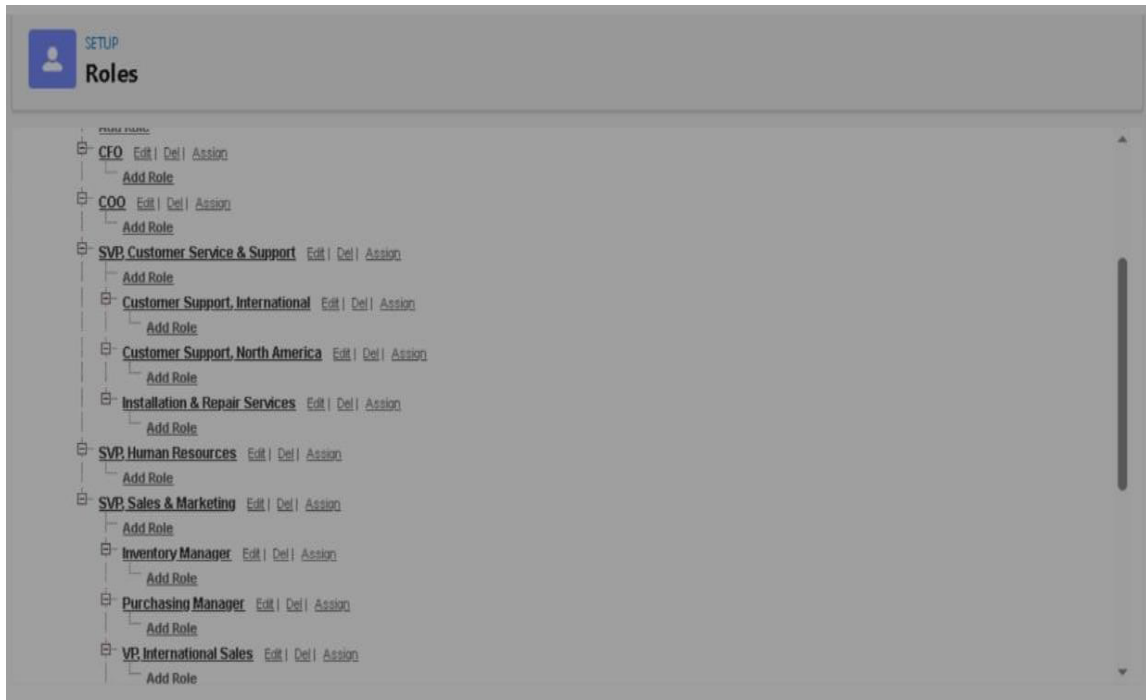
I. A garage management system can help streamline garage processes. This software offers various features that can help businesses manage their workflow efficiently. For instance, garage owners can easily track the progress of their vehicles and assign tasks to their employees through a centralized platform. This can help them reduce errors and delays in their operations.

II. According to a study by the University of Michigan, businesses can save up to 30% of their time by streamlining their processes.

- Centralized Data and Simplified Procedures

I. A garage operation software can help businesses centralize their data and simplify

their procedures. This software offers various features



customers' information, invoices, and payments through a centralized platform. This can help them save time and reduce errors in their procedures.

According to a study by IBM, businesses can save up to 40% of their time by centralizing their data and simplifying their procedures.

- Enhanced Effectiveness of Operations

I. A garage management software can help enhance the effectiveness of operations. This software offers various features that can help businesses optimize their operations and reduce waste. For instance, garage owners can easily track their inventory levels and reorder products when they reach a certain threshold through a centralized platform. This can help them reduce waste and optimize their inventory levels.

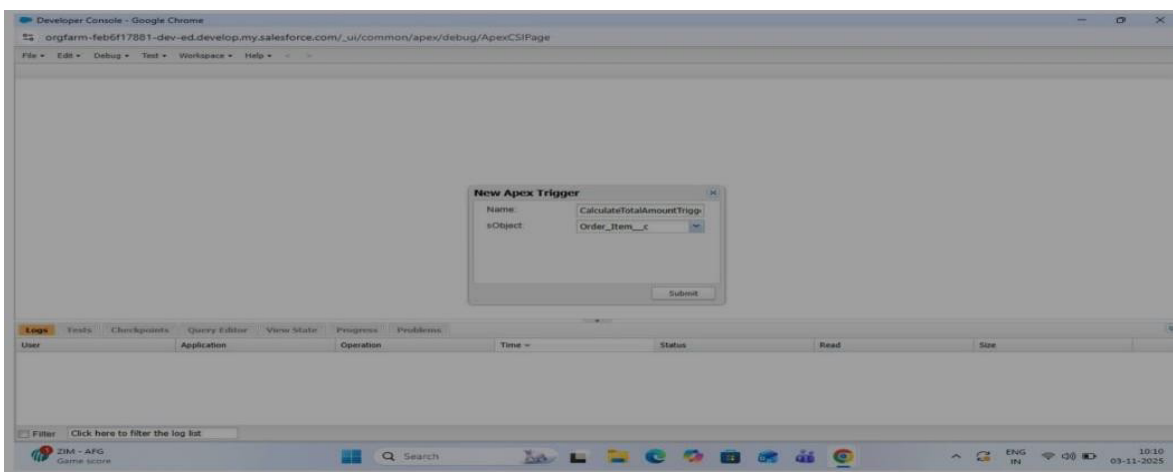
According to a study by IBM, businesses can save up to 40% of their time by centralizing their data and simplifying their procedures.

Enhanced Effectiveness of Operations:

A garage management software can help the effectiveness of operations. This software offers various features that can help businesses optimize their operations and reduce waste. For instance, garage owners can easily track their inventory levels and reorder products when they reach a certain threshold through a

centralized platform. This can help them reduce waste and optimize their inventory levels.

According to a study by the University of Minnesota, businesses can save up to 50% of their time by enhancing the effectiveness of their operation.



Cost Cutting Through Effective Management

A garage management software can help businesses cut costs through effective management. This software offers various features that can help businesses reduce their expenses and increase their profits. For instance, garage owners can easily track their expenses and revenues through

a centralized platform. This can help them identify areas where they can cut costs and increase their profits.

According to a study by the University of Maryland, businesses can save up to 25% of their expenses cutting costs through effective management..

How can garage management software help streamline my business operations?

Garage management software can help streamline your business Of automating tasks that were previously done manually.

Key Benefits of Garage Management Software

- Automated Workflow Management
 - Tracks service orders, job cards, and vehicle history automatically.
 - Reduces paperwork and manual data entry2.
- Inventory Control
 - Monitors stock levels in real time.
 - Alerts you when parts are low and helps reorder efficiently.
- Customer Relationship Management (CRM)
 - Stores customer profiles, vehicle details, and service history.

- o Sends automated reminders for service due dates and promotions.
- Billing and Invoicing
 - o Generates accurate invoices instantly.
 - o Integrates with payment gateways for faster transactions.

How can I choose the right garage management software for my business?

To choose the right garage management software for your business, consider your specific needs and the features that will be most useful to you. Additionally, consider factors such as ease of use, customer support, and pricing. Garage management software by Rocket Flow offers customizable solutions to meet the specific needs of your garage, and provides customer support and training to ensure successful use of the software.

What are the key considerations for implementing garage management software in my business?

Key considerations for implementing garage management software in your business include selecting the right software, ensuring it integrates well with existing systems, training staff on how to use the software, and monitoring usage and performance. Additionally, it's important to have a plan in place for managing data and backing up important information.

Garage Management System (Brief Explanation)

A Garage Management System (GMS) is software used to manage all the activities of a vehicle service center — such as customer registration, vehicle repair, job assignment, billing, and reports — in a

digital and
organized way.

Key Benefits of Garage Management Software

Customer Management – Stores customer details.

Vehicle Management – Tracks vehicles and their service history.

Service Management – Assigns and monitors repair jobs.

Inventory Management – Keeps record of spare parts and tools

Billing – Generates bills automatically after service.

Example:

Customer: John

Vehicle: Honda City (Reg No: TN-10-AB-2345)

Problem: Oil leaked.

Mechanic Assigned:

David Parts Used: Engine

Oil (1L) Service Cost:

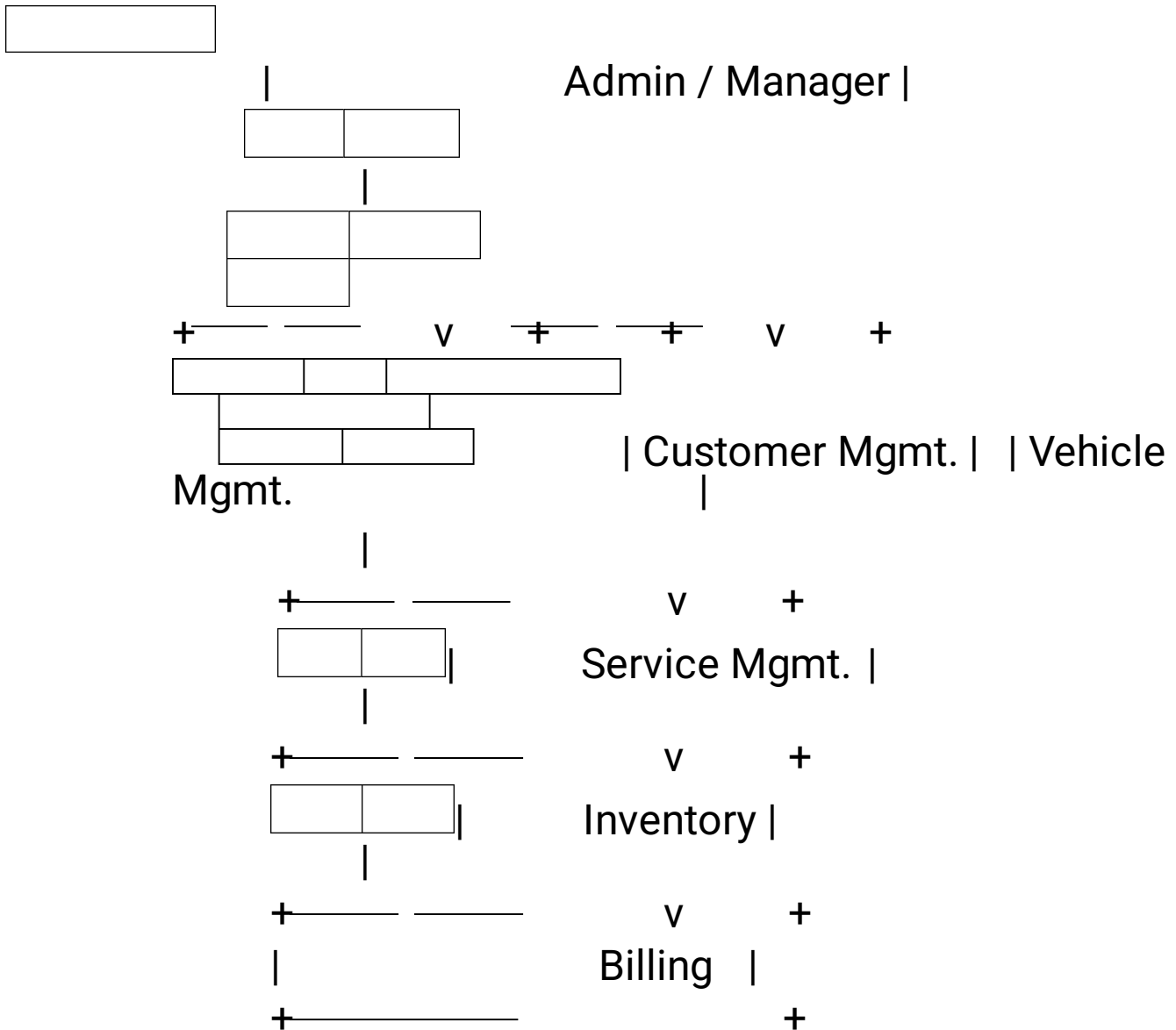
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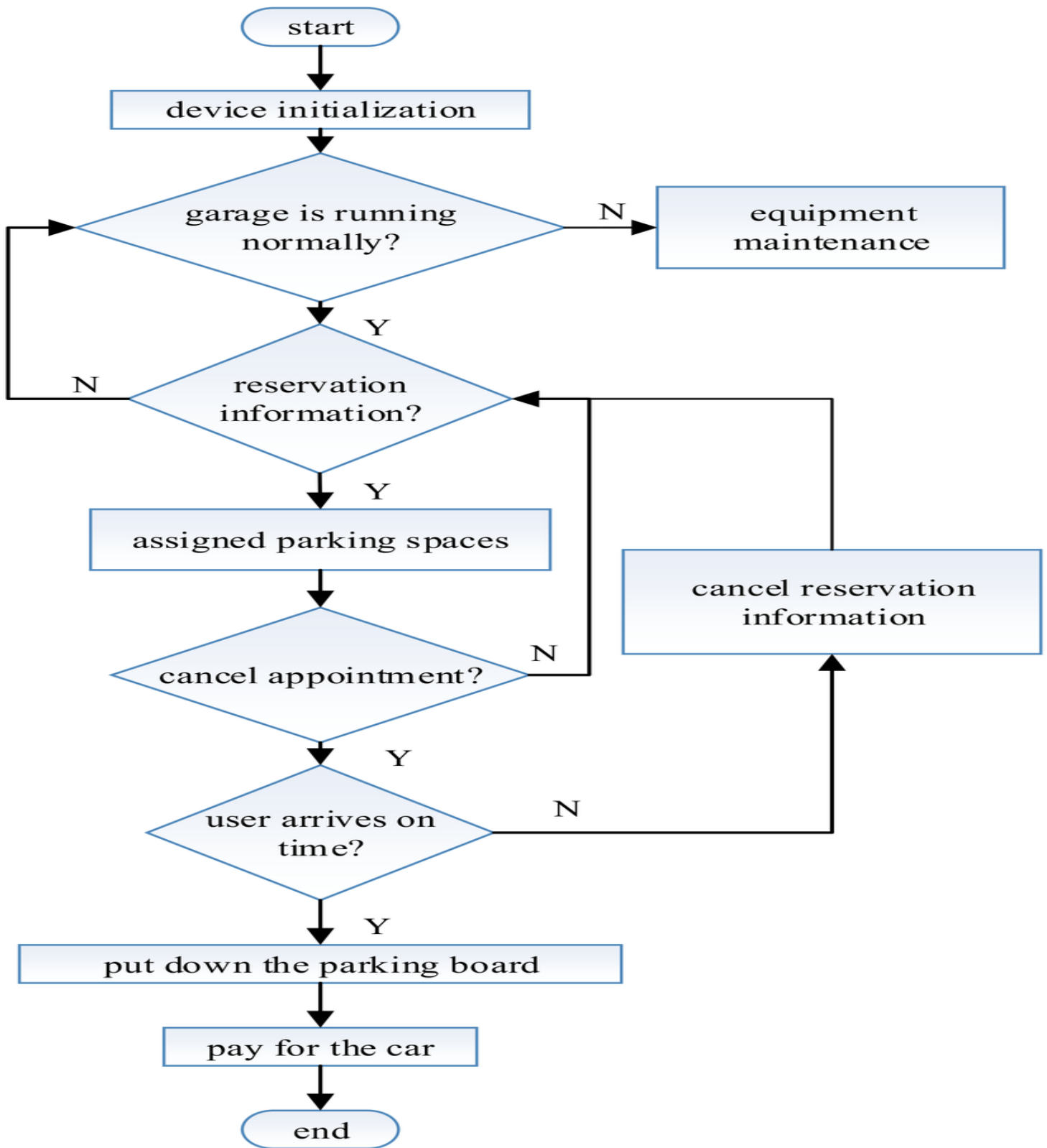
Bill Generated: Automatically by the system.

Create new service

requests Assign
jobs to mechanics
Update job status

Diagram – System Flow (Use Case Diagram)





1. Customer books a service.
2. Mechanic performs service and updates job status.
3. System generates the bill using service details.
4. Admin can view reports anytime.

Core Modules:

Module

Login/Logout
Manage users (staff,
mechanics) View reports

Customer

Management
Add new
customers
Update customer
details View
service history

Vehicle Management

Add and store vehicle details (model, registration
number, type, etc.) Link vehicle to a customer

Job/Service Management

Create new
servicerequestsAssign jobs
to mechanics

Update job status (Pending, In Progres

Completed) Inventory Management

Track spare parts
and tools Update
stock levels
Generate purchase reports

Customer
Management Add new
customers

Update customer
details View
service history

Customer Module: Registers and manages customer
information.

Vehicle Module: Records vehicle details and links them with
customers.

Service Module: Schedules and tracks service jobs and repairs.

Inventory Module: Manages spare parts and stock levels.

Billing Module: Generates invoices and payment receipts

Billing System

Auto-generate bills for completed services Include labor charges and parts used

Print/download

invoice Reports

Daily service report
Mechanic performance
report Revenue reports

System Requirements

Hardware:

Processor: Intel i3 or above
RAM: Minimum 4GB
Storage: 500GB or more

Software:

Operating System:
Windows / Linux
Programming Language:
Java
Database:
MySQL Server:
Apache Tomcat

IDE: NetBeans /
Eclipse

System Modules:

Customer Module: Registers and manages customer information.

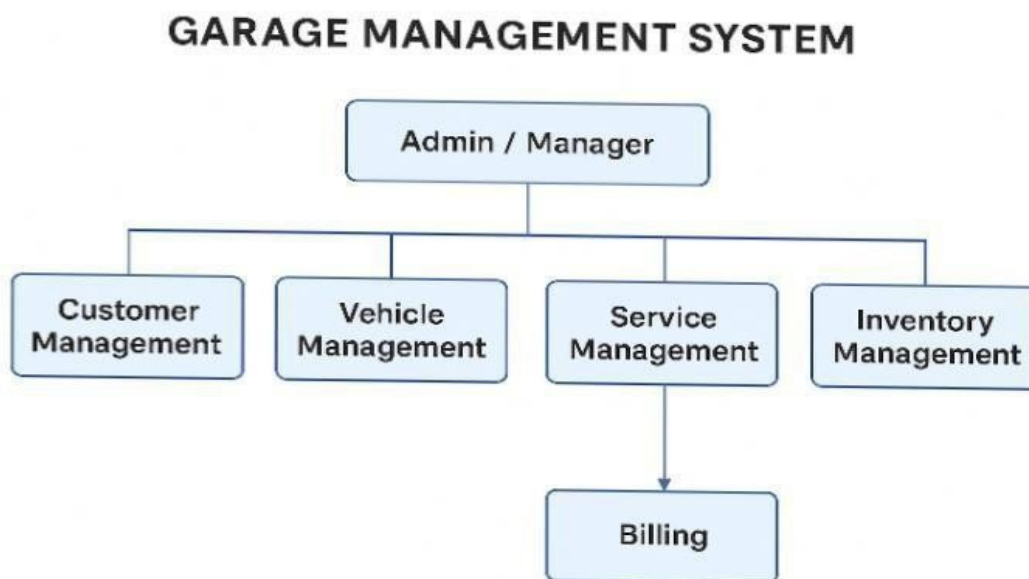
Vehicle Module: Records vehicle details and links them with customers.

Service Module: Schedules and tracks service jobs and repairs.

Inventory Module: Manages spare parts and stock levels.

Billing Module: Generates invoices and payment receipts.

System Design.



The system design includes two major diagrams: the Use Case Diagram and the Entity Relationship (ER) Diagram.

Use Case Diagram:

Admin -- [Customer Management]
Admin -- [Vehicle Management]
Admin -- [Service Management]
Admin -- [Inventory Management]
Admin -- [Billing System]
Customer -- [Service Request / Feedback]

Entity Relationship (ER) Diagram:

CUSTOMER (customer_id, name, contact)

1:N

VEHICLE (vehicle_id, model, reg_no, customer_id)

1:N

SERVICE (service_id, type, cost, vehicle_id)

1:

1

BILLING (bill_id, date, total_amount,
service_id) INVENTORY (item_id,
part_name, quantity, price)

CONCLUTION:

A garage management system (GMS) concludes by summarizing that it is a crucial investment for modern auto shops, offering enhanced efficiency, improved customer satisfaction, and long-term scalability. By automating tasks like scheduling and inventory, centralizing customer data, and streamlining billing, GMS allows garages to cut costs, increase productivity, and thrive in a competitive digital landscape.

The Garage Management System (GMS) plays a pivotal role in modernizing and streamlining automotive service operations. By automating key processes such as job scheduling, inventory tracking, billing, and customer communication, it enhances operational efficiency and reduces human error. The system empowers garage owners and technicians to deliver faster, more reliable service while maintaining detailed records for every vehicle and customer.

- Improved Productivity: Automates routine tasks and

optimizes resource allocation.

- Enhanced Customer Experience: Offers timely updates, service reminders, and transparent billing.
- Data-Driven Decisions: Provides actionable insights through analytics and reporting.
- Scalability: Supports business growth with multi-location .

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