Garage Management System – Project Report

# 1. Abstract

The Garage Management System (GMS) is designed to automate the operations of a garage or vehicle service center. Traditional methods involve manual entry of customer and vehicle details, which often leads to errors, delays, and inefficiency. The proposed system provides a digital solution that maintains customer records, vehicle service history, billing, inventory management, and employee task allocation. This system increases efficiency, reduces paperwork, and enhances customer satisfaction by providing accurate and timely services.

# 2. Introduction

The automobile industry is expanding rapidly, leading to an increased demand for efficient service management in garages and workshops. A manual system cannot handle large volumes of data efficiently, resulting in delays and customer dissatisfaction. The Garage Management System aims to provide a computerized platform that enables smooth management of customer details, vehicle information, repair status, billing, and spare part inventory. This project also ensures transparency between garage staff and customers.

# 3. Objectives

- To automate garage operations.  
- To store and manage customer and vehicle data efficiently.  
- To track service requests and their progress in real-time.  
- To maintain spare parts inventory and generate bills automatically.  
- To reduce manual errors and paperwork.  
- To improve overall customer service and garage productivity.

# 4. Existing System

The existing garage systems mainly depend on manual record-keeping using registers and papers. It is time-consuming, prone to human error, and difficult to manage large volumes of customers and vehicles.

* Drawbacks:
* Lack of security for data.
* Inefficiency in handling large customer base.
* No quick search or retrieval system.

# 5. Proposed System

- A computerized solution that stores customer, vehicle, and service records.  
- Automated billing system for accuracy.  
- Dashboard to monitor ongoing repairs and service history.  
- Inventory management system for spare parts.  
- Secure database with user authentication.  
- Reports generation for analysis and business decisions.

# 6. System Requirements

* Hardware Requirements:
* Processor: Intel i3 or above
* RAM: 4 GB or higher
* Hard Disk: 250 GB minimum
* Monitor: 15” or higher resolution
* Software Requirements:
* Operating System: Windows / Linux
* Frontend: HTML, CSS, JavaScript (or PHP/Java/Python GUI)
* Backend: PHP / Java / Python
* Database: MySQL / Oracle
* Tools: Visual Studio Code, XAMPP/WAMP

# 7. System Design

Data Flow Diagram (DFD) – Level 0:

Customer → [Garage Management System] → Service Records / Bill / Vehicle Status

Entities in ER Diagram:

- Customer  
- Vehicle  
- Service Request  
- Mechanic/Employee  
- Spare Parts / Inventory  
- Billing

# 8. Implementation

The system is implemented in modules:  
1. Customer Module – Stores customer and vehicle details.  
2. Service Module – Records service requests and updates progress.  
3. Inventory Module – Tracks spare parts availability.  
4. Billing Module – Generates accurate bills for customers.  
5. Admin Module – Manages employees, reports, and overall system.

# 9. Testing

- Unit Testing – Each module tested individually.  
- Integration Testing – Modules tested together.  
- System Testing – Tested on different devices and OS.  
- User Acceptance Testing – Feedback from garage staff and customers.

# 10. Conclusion

The Garage Management System successfully automates the operations of a garage, making it more efficient, secure, and customer-friendly. By reducing manual effort, the system helps save time, minimize errors, and improve productivity. Future enhancements could include a mobile application for customers to book services and track vehicle status remotely.

# 11. References

- Books on Database Management & Software Engineering  
- Online tutorials and documentation (W3Schools, GeeksforGeeks, JavaTPoint)  
- IEEE Research papers on Management Systems