

Phase 3: Project Design Phase

Project Title: Garage Management System

Introduction

The design phase represents a fundamental stage in the development life cycle. During this period, the conceptual requirements and initial concepts are transformed into a meticulously structured system model. For the Garage Management System (GMS), this phase details the design to illustrate its operational flow, component composition, and how data moves between its various modules. The principal aim is to guarantee that the system is intuitive, highly effective, and fully supports critical garage activities like service coordination, vehicle tracking, and financial processing.

System Design Overview

The GMS utilizes Salesforce tools and is structured to be both modular and scalable. The design incorporates various elements such as database objects, established relationships, automation flows, reports, and informational dashboards. This structure links essential data—including vehicle specifics, client information, technician roles, and service orders—to enable efficient management and comprehensive data monitoring.

Architectural Design

The system adheres to a **Client-Server Architecture** by leveraging Salesforce's cloud-based infrastructure.

- **Client Side:** This is the point of access for users, such as garage management, service technicians, and customers, interacting via Salesforce's web or mobile interface.
- **Server Side:** Salesforce's servers are responsible for storing and processing all garage-related data, including customer profiles, service requests, invoicing details, and analytical reports.

All interactions occur via the Salesforce cloud platform, which provides data security, rapid access, and real-time data synchronization

Entity Relationship (ER) Design :

The ER Diagram defines the logical organization of the Garage Management System, utilizing the following core components:

- **Customer Object:** Holds information such as the customer's Name, Contact Number, Email address, and physical Address.
- **Jewellery Object:** Contains fields for the Item Name, Type, Material, Weight, and Price.
- **Service Object:** Includes the unique Service ID, the Type of Service performed, the Service Date, the Mechanic Assigned, and the total Cost.
- **Mechanic Object:** Stores the Mechanic's Name, Contact Information, and their area of Specialization.
- **Relationships:**
 - A single Customer can be linked to multiple Vehicles.
 - A Vehicle can have numerous associated Service Records.
 - Each Service is executed by one designated Mechanic.

This organizational scheme ensures that all workshop operations are interconnected and readily searchable.

Data Flow Design

The movement of data within the Garage Management System is structured as follows:

1. Customer and vehicle details are initially recorded and saved into their dedicated objects.
2. A specific service request is initiated and linked to a vehicle.
3. The assigned technician completes the service and updates the job specifics.
4. Upon service completion, an invoice is generated automatically.
5. Reports and dashboards provide a summarized view of daily services, revenue earned, and technician performance.

This data flow is designed to reduce manual tasks and enhance the reliability of the data.

User Interface Design

The interface is built using the Salesforce Lightning App Builder.

- **Home Page:** Provides an overview displaying the total number of customers, vehicles, and services currently in progress.
- **Customer Page:** Permits the entry, modification, and retrieval of customer and vehicle records.
- **Service Page:** Shows both active and historical service records, along with the assigned mechanics.
- **Mechanic Page:** Presents a list of all technicians, their specializations, and their current workload.
- **Reports & Dashboards:** Offer visual summaries of financial revenue, types of services most performed, and mechanic efficiency.

The visual presentation is intended to be clean, straightforward, and easily navigable for both managerial and service staff.

Functional Design

The system is equipped with the following functional capabilities:

- **Customer Management:** Allows for the adding, modifying, and viewing of all customer profiles.
- **Vehicle Management:** Maintains detailed vehicle information and links it appropriately to customers.
- **Service Management:** Records new service requests, allocates tasks to mechanics, and tracks service completion status.
- **Billing & Invoicing:** Features the automatic creation and management of service financial bills.
- **Reporting & Dashboards:** Facilitates the analysis of performance metrics like daily income, popular services, and customer frequency.

Security and Access Design

The system incorporates robust access control and preserves data integrity.

- Only authorized individuals are permitted to access or alter records.
- Administrative users possess full permissions across the system.

- Salesforce's native authentication, data encryption, and specific permission sets guarantee a high level of security.
 - Service mechanics are restricted to accessing only the data pertinent to service-related tasks.
-

Output Design

The system is designed to produce the following essential outputs:

- Automatically generated invoices for all completed services.
 - Detailed reports covering services rendered, revenue generated, and customer visits.
 - Dashboards that visually represent technician performance and overall service statistics.
 - Notifications for services awaiting approval or bills that are past due.
-

Conclusion

The Project Design Phase effectively defines the underlying structure and operational flow of the Garage Management System. With properly structured objects, defined relationships, and automated processes, the system delivers a trustworthy and efficient platform for managing routine garage activities. The choice of the Salesforce-based platform guarantees security, automation, and user-friendliness, thereby boosting both productivity and customer satisfaction.