9120: PSY COLLEGE OF ENGINEERING

COMPUTER SCIENCE ENGINEERING

Completed the project “Garage Management System”

TECHNOLOGY NAME: Salesforce Developer

SUBMITTED BY,

NM TEAM ID: NM2025TMID00746

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Phase 1. Introduction and Project Scope

Problem Statement

A local garage presently uses separate spreadsheets and paper files to manage customers, appointments, service records, and billing. This manual and scattered method causes inefficiency and increases the risk of data loss.It also leads to duplication of information and makes it difficult to extract meaningful business insights.
Hence, there is a strong need for a centralized, efficient, and reliable application to streamline operations and improve service delivery.

Project Objectives

The aim of this project is to develop a fully functional Garage Management System focused on achieving the following objectives:

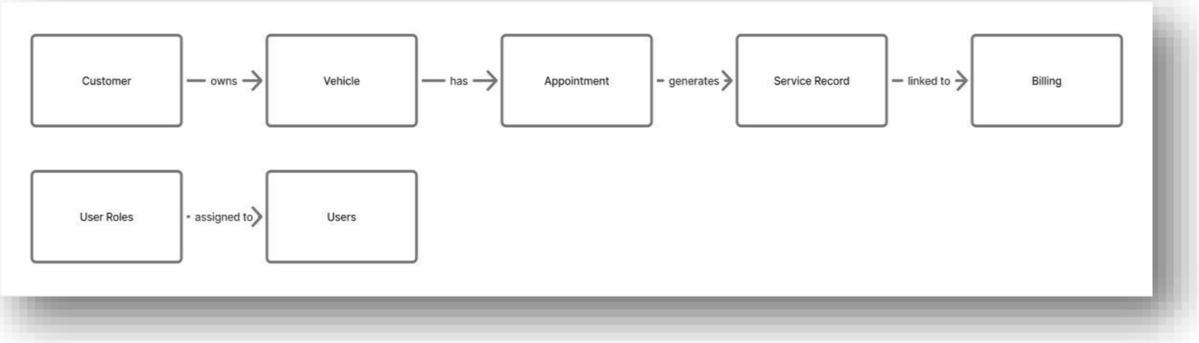
- ❖ Establish a centralized database to store and maintain accurate customer information.
- ❖ Design an efficient appointment management feature to simplify booking and tracking.
- ❖ Record and maintain complete service history for every vehicle handled.
- ❖ Automate billing operations and collect customer feedback for completed services.
- ❖ Implement secure role-based access for managers and sales personnel with defined permissions.
- ❖ Deliver real-time business insights through interactive reports and dashboards.

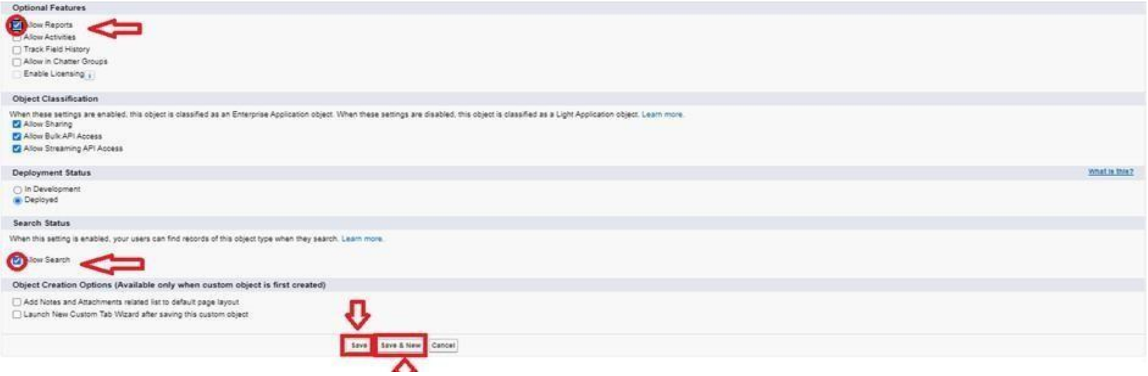
Phase 2. System Design and Data Model

Field Label	**Field Name (API)**	**Data Type**	**Picklist Values**	**Description**
Customer Name	Customer_Name__c	Text	-	Name of the garage customer
Contact Number	Contact_Number__c	Phone	-	Customer’s phone contact
Appointment Date	Appointment_Date__c	Date/Time	-	Scheduled date and time for appointment
Service Type	Service_Type__c	Picklist	Oil Change, Tire Rotation, Inspection	Service categorization
Status	Status__c	Picklist	Scheduled, In Progress, Completed,Cancelled	Progress state
Billing Amount	Billing_Amount__c	Currency	-	Final billed cost for the service

Feedback Rating	Feedback_Rating__c	Number	1, 2, 3, 4, 5	Customer feedback on service quality

Entity-Relationship Diagram (ERD)




Optional Features

☑ Allow Reports
□ Allow Activities
□ Track Field History
□ Allow in Chatter Groups
□ Enable Licensing

Object Classification

When these settings are enabled, this object is classified as an Enterprise Application object. When these settings are disabled, this object is classified as a Light Application object. Learn more.

☑ Allow Sharing
☑ Allow Bulk API Access
☑ Allow Streaming API Access

Deployment Status

What is this?

○ In Development
● Deployed

Search Status

When this setting is enabled, your users can find records of this object type when they search. Learn more.

☑ Allow Search

Object Creation Options (Available only when custom object is first created)

□ Add Notes and Attachments related list to default page layout
□ Launch New Custom Tab Wizard after saving this custom object

1. Customer → Vehicle (owns)

- Meaning: One Customer can own multiple Vehicles.
- Type: One-to-Many (1–M) relationship.
- Example: A customer like *Ravi Kumar* may own two vehicles — a bike and a car — both linked to the same customer record.

2. Vehicle → Appointment (has)

- Meaning: Each Vehicle can have several Appointments for servicing or repairs.

- Type: One-to-Many (1–M).
- Example: The same car can have multiple appointments over time — e.g., one for an oil change and another for tire replacement.

3. Appointment → Service Record (generates)

- Meaning: Once an appointment is completed, it generates a Service Record that logs what work was done.
- Type: One-to-One (1–1).
- Example: Appointment #A001 (for 5th Nov) produces Service Record #SR001 containing details like parts used and total cost.

4. Service Record → Billing (linked to)

- Meaning: Each Service Record results in a Billing entry that contains payment and invoice information.
- Type: One-to-One (1–1).
- Example: Service Record #SR001 → Billing #B001 with ₹4500 total payment.

5. User Roles → Users (assigned to)

- Meaning: The User Roles entity defines roles such as *Admin*, *Mechanic*, *Receptionist*, etc., and each role can be assigned to multiple users.
- Type: One-to-Many (1–M).
- Example: Role = *Mechanic* → assigned to Users = *John*, *Ravi*, *Suresh*.

Phase 3. Business Logic and Automation

Validation Rules

Validation rules in Salesforce (or any similar system) are conditions that prevent users from saving invalid or inconsistent data. Each rule checks for a logic condition — if the condition evaluates to true, the record won't save, and an error message is shown.

Object	Rule Logic	Error Message
Appointment	Appointment_Date__c < TODAY()	You cannot book an appointment in the past.
Service Record	Status__c != 'Completed' && Feedback_Rating__c != NULL	Feedback can only be entered after service completion.

1. Appointment Validation Rule

Rule Logic: Appointment_Date__c < TODAY()

Meaning: Checks if the appointment date entered is before today's date. Prevents creating or editing appointments in the past.

Error Message: You cannot book an appointment in the past.

Why Important: Prevents scheduling mistakes and ensures only future appointments are valid.

2. Service Record Validation Rule

Rule Logic: Status__c != 'Completed' && Feedback_Rating__c != NULL

Meaning: Ensures that feedback is entered only after the service is marked as 'Completed'.

Error Message: Feedback can only be entered after service completion.

Why Important: Keeps feedback data consistent with service completion status.

Automation (Flows & Apex)
Automation ensures that when data changes, related actions are performed automatically — without manual effort. This helps maintain efficiency and consistency.

1. Flows (No-Code Automation)
Example Flow: When an appointment status changes to ‘Completed’, a flow automatically creates a related Service Record.

Detailed Logic:
1. Trigger: User updates Appointment status to 'Completed'. **2. Flow runs:** Looks up appointment details, checks validation, creates Service Record.
3. Record Creation: Copies Customer, Vehicle, and Appointment details into the new record.
4. User Notification: Alerts user that a service record was created.

Purpose: Reduces manual entry, maintains data integrity, ensures automation consistency.

2. Apex Code (Custom Backend Logic)
When a Billing record is created, an Apex Trigger runs automatically to ensure data consistency. It verifies if the Service Record exists, enforces data integrity, and manages relationships between Billing, Service, and Feedback.

Apex classes include inline comments explaining logic for maintainability and clarity.

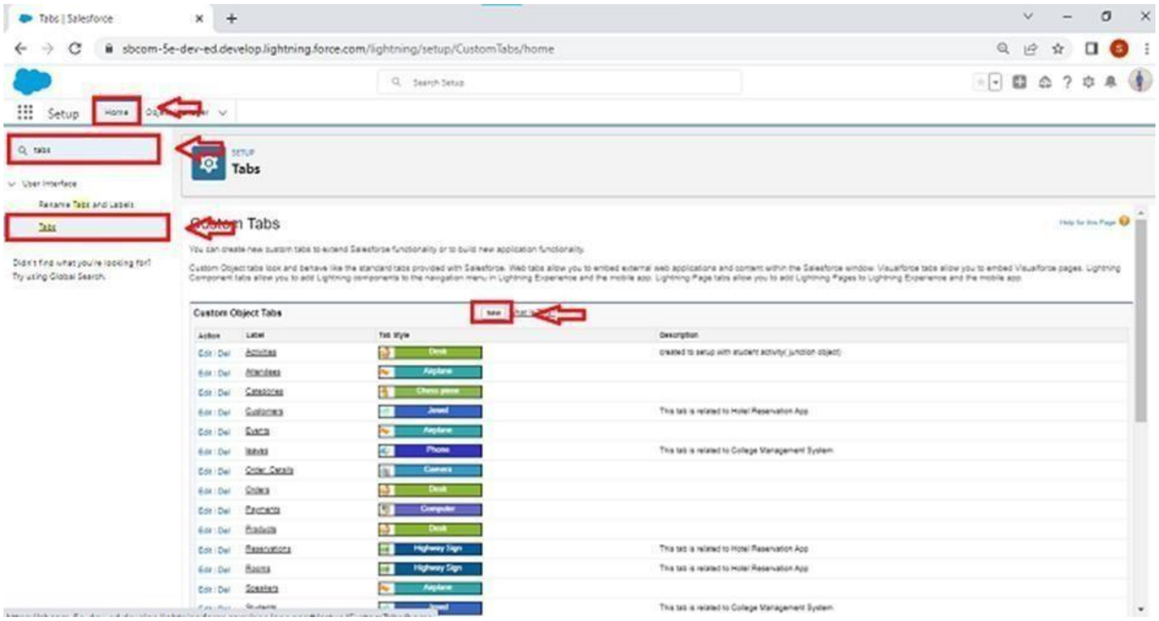
Why Apex is needed: Provides advanced control over logic and handles complex automation scenarios beyond standard flows.

Phase 4. Security and Sharing Model

Profiles, Role Hierarchy, and Sharing Rules

Profiles

Profiles define what users can do within the system — controlling their permissions on objects, fields, and functions.



Tabs | Salesforce
sbcom-5e-dev-ed.develop.lightning.force.com/lightning/setup/CustomTabs/home
Search Setup
Setup
Home
tabs
User Interface
Rename Tabs and Labels
Tabs
Didn't find what you're looking for? Try using Global Search.
SETUP
Tabs
Help for this Page
New

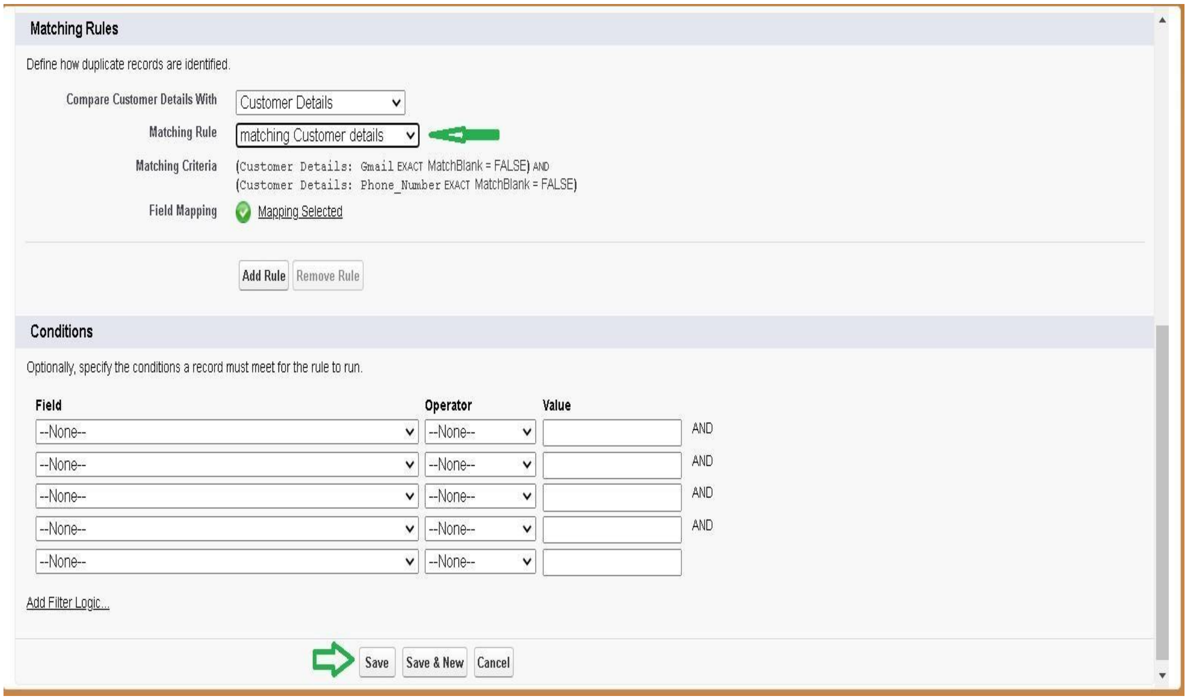
Custom Tabs

You can create new custom tabs to extend Salesforce functionality or to build new application functionality.

Custom Object tabs look and behave like the standard tabs provided with Salesforce. Web tabs allow you to embed external web applications and content within the Salesforce window. 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

Action	Label	Tab Style	Description
Edit | Del	Activities	Desk	created to setup with student activity(junction object)
Edit | Del	Attendees	Airplane	
Edit | Del	Categories	Chess piece	
Edit | Del	Customers	Jewel	This tab is related to Hotel Reservation App
Edit | Del	Events	Airplane	
Edit | Del	[illegible]	Phone	This tab is related to College Management System
Edit | Del	Order Details	Camera	
Edit | Del	Orders	Desk	
Edit | Del	Payments	Computer	
Edit | Del	Products	Desk	
Edit | Del	Reservations	Highway Sign	This tab is related to Hotel Reservation App
Edit | Del	Rooms	Highway Sign	This tab is related to Hotel Reservation App
Edit | Del	Speakers	Airplane	
Edit | Del	Students	Jewel	This tab is related to College Management System



Matching Rules

Define how duplicate records are identified.

Compare Customer Details With: Customer Details

Matching Rule: matching Customer details

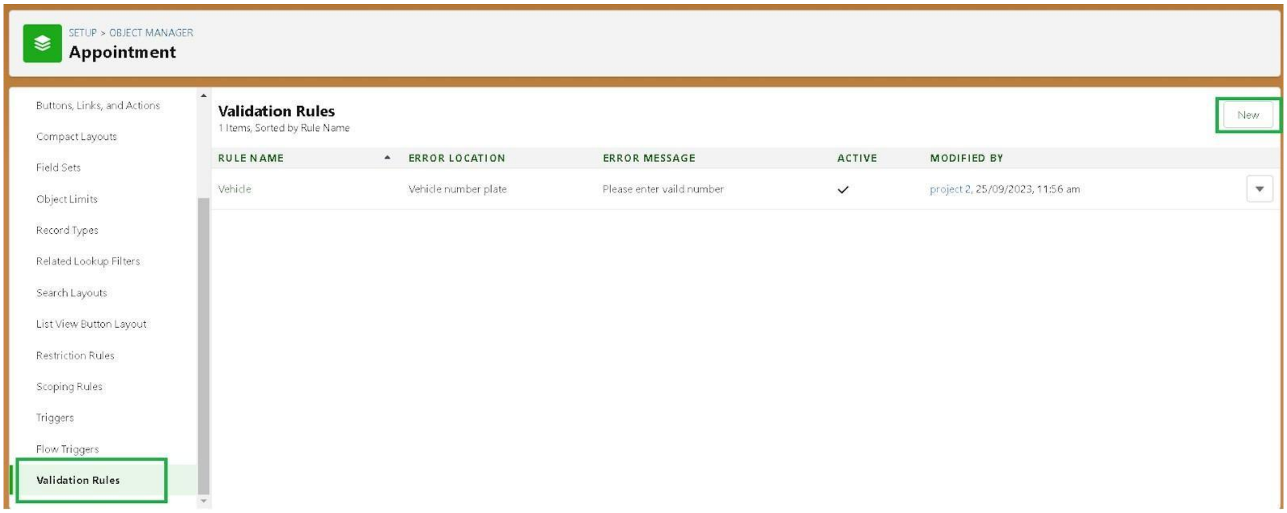
Matching Criteria: (Customer Details: Gmail EXACT MatchBlank = FALSE) AND (Customer Details: Phone_Number EXACT MatchBlank = FALSE)

Field Mapping: Mapping Selected

Conditions

Optionally, specify the conditions a record must meet for the rule to run.

Field	Operator	Value	
--None--	--None--		AND
--None--	--None--		AND
--None--	--None--		AND
--None--	--None--		AND
--None--	--None--		



Validation Rules

1 Items, Sorted by Rule Name

RULE NAME	ERROR LOCATION	ERROR MESSAGE	ACTIVE	MODIFIED BY
Vehicle	Vehicle number plate	Please enter vaild number	✓	project 2, 25/09/2023, 11:56 am

1. Manager Profile Access Level:

Full Access

Capabilities:

- ❖ Allows full CRUD actions for Customers, Appointments, Service Records, and Billing.
- ❖ Provides access to performance reports and analytics.
- ❖ Used by admins or supervisors for full system control and visibility.

Purpose: Managers oversee business operations and ensure data consistency. This role has unrestricted control to manage and audit all records.

2. Salesperson Profile

Access Level: Limited Operational Access

- ❖ Permitted to schedule and modify appointments.
- ❖ Authorized to view customer profiles and service history.
- ❖ Deletion privileges are disabled to protect data accuracy.
- ❖ Access to reports is limited and controlled.

Purpose: Salespersons handle day-to-day interactions booking appointments and maintaining customer relationships, but don’t have administrative control.

Role Hierarchy
A Role Hierarchy defines who can see whose data within the system. Higher roles automatically inherit access to records owned by lower roles.

Structure:
Manager (Top)
↓
Salesperson

Managers **can view, edit, and report** on all records created by Salespersons, while **Salespersons cannot access records owned by Managers** or other Salespersons.

Sharing Rules
Sharing Rules determine how records are shared beyond the role hierarchy, making collaboration easier while maintaining privacy.

1. Organization-Wide Defaults (OWDs)
All custom objects (like Customer, Appointment, Service Record, Billing) are set to Private, meaning users can only see records they own — unless sharing rules or hierarchy permissions allow otherwise.

2. Sharing Rule Example
Rule: All Service Records owned by the Sales Team group are automatically shared with the Manager role.

Goal: Gives managers visibility into team performance and customer service quality.

Effect: Managers can view or report on all Service Records created by sales staff, even if they don’t own those records.

Summary Table

Category	**Description**	**Access Impact**
Profile: Manager	Full CRUD access on all objects + reports	Complete visibility and control
Profile: Salesperson	Create/Edit appointments, read access to customers & service records	Limited operational access
Role Hierarchy	Manager > Salesperson	Manager sees all subordinate records
OWD	All objects set to Private	Restricts default visibility
Sharing Rule	Shares Sales Team’s Service Records with Manager	Enables oversight and reporting

Phase 5. Analytics (Reports and Dashboards)

Reports and Dashboard Details

Report Details

Reports help in analyzing business performance, customer engagement, and financial trends. Below are two key reports designed for the system.

1. New Service Information Report

• Report Type: Customers with Service Records

• Columns/Groupings: Customer Name, Vehicle, Date, Service Type

• Filters: Service Date = Last 30 Days

Purpose: This report helps track all services performed in the last 30 days. It provides insights into customer engagement, frequency of service appointments, and vehicle maintenance activity. Managers can identify recurring customers, common service types, and seasonal patterns.

Use Case Example: The service center manager can view how many services were done recently, identify peak demand days, and check which vehicles or services are most common.

2. High-Value Customers Report

• Report Type: Customers with Billing Summaries

• Columns/Groupings: Customer Name, Total Billing

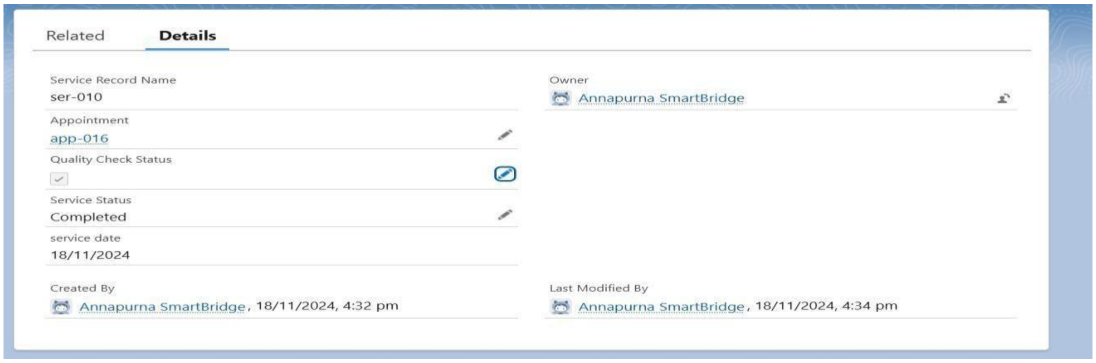
• Filters: Billing Amount > ₹10,000

Purpose: This report focuses on identifying top customers who contribute the most revenue. It helps in planning loyalty programs, offering personalized discounts, and maintaining premium service quality for highvalue clients.

Use Case Example: A sales manager can generate this report to identify high-spending customers and send them special offers or feedback requests.

Dashboard Components

Dashboards visually represent key performance indicators (KPIs) and summarize real-time data for decision-making. Each component is designed to present actionable insights.



Service Record Name
ser-010

Appointment
app-016

Quality Check Status
☑

Service Status
Completed

service date
18/11/2024

Owner
Annapurna SmartBridge

Created By
Annapurna SmartBridge, 18/11/2024, 4:32 pm

Last Modified By
Annapurna SmartBridge, 18/11/2024, 4:34 pm

1. Customer Review Service Rating

- **Type:** Line Chart (or Bar Chart)
- **Description:** Displays the trend of average service ratings over time (weekly or monthly). This helps identify improvements or declines in service quality and allows management to respond proactively.

Purpose: To monitor customer satisfaction levels and measure the impact of recent service process changes or staff performance.

Each dashboard component includes:

- ❖ Title: Specifies what information the chart or graph represents.
- ❖ Data Source: Pulls information from system reports (e.g., service history, billing data).
- ❖ Insight: Shows key patterns or unusual data points to help decision-making quickly.

Report Name	**Report Type**	**Columns/Groupings**	**Filters**
New Service Information	Customers with Service Records	Customer Name, Vehicle, Date, Service Type	Service Date = Last 30 Days

High-Value Customers	Customers with Billing Summaries	Customer Name, Total Billing	Billing Amount > ₹10,000

Conclusion

The **Garage Management System** built on Salesforce provides a **comprehensive, efficient, and scalable solution** for managing daily operations such as customer details, service appointments, billing, and feedback. It streamlines workflows, ensures data accuracy, and improves overall customer satisfaction through automation and transparency.