ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, KADAPA

Project Report on

SALESFORCE - Garage Management system

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1. PROJECT OVERVIEW

1.1 OVERVIEW

The **Garage Management System (GMS)** is a comprehensive Salesforce CRM solution designed to modernize operations for automotive repair and maintenance facilities. This system centralizes customer interactions, service workflows, inventory management, and financial tracking into a single platform, eliminating inefficiencies of manual processes.

GMS empowers garages to:

- Provides access to add customers details.
- Automate service appointments.
- Vehicle service records update.
- Updates reports about the bills based on the records updates.
- Provide data-driven insights through reports and dashboards.

Built on **Salesforce Lightning**, GMS combines **user-friendly interfaces** with **robust automation** to enhance productivity, reduce errors, and improve customer satisfaction.

1.2 Key Features & Business Needs

1.2.1 Key Features

1. Vehicle Service Management

- Schedule, track, and manage service jobs.
- Record service history and maintenance logs.
- Support for multiple service types (repairs, oil change, diagnostics, etc.).

2. Job Card Creation

- Auto-generate job cards with details like customer info, vehicle data, complaints, and technician assigned.
- Track job progress (pending, in-progress, completed).

3. Vehicle & Customer Records

- Maintain customer database with contact and billing information.
- Record vehicle details (model, registration number, VIN, insurance, etc.).

4. Billing & Invoicing

- Generate service invoices with parts and labor breakdown.
- Apply taxes, discounts, and payment status tracking.
- Support for multiple payment methods.

5. Spare Parts Inventory Management

- Real-time tracking of parts availability.

6. Technician Assignment & Management

- Assign tasks to mechanics/technicians.
- Track work progress, time spent, and performance.

7. Appointment Booking & Reminders

- Online or manual appointment scheduling.
- SMS/Email reminders for service due dates or appointments.

8. Reporting & Analytics

- Reports on revenue, service types, technician productivity, inventory usage, etc.
- Export data to Excel or PDF.

9. User Access Control

- Role-based access (Admin, Technician, Receptionist, etc.).
- Secure login and permissions.

10. Cloud or Web-Based Access (optional)

- Access the system from any device with internet.
- Secure data backup and synchronization

2. OBJECTIVES

2. Objectives

Automate Garage Operation

Streamline and automate tasks such as job card creation, vehicle service tracking, and billing to improve operational efficiency.

Maintain Accurate Records

Keep digital records of customers, vehicles, services, spare parts, and payments for easy access and accountability.

Improve Customer Experience

Provide timely service updates, reminders, and transparent billing to enhance customer satisfaction and loyalty.

Enable Scalability

Provide a system that grows with the business and can adapt to new branches, more vehicles, or additional services.

Reduce Manual Errors

Minimize paperwork and human errors by digitizing key garage processes.

Enhance Security and Access Control

Allow role-based access to protect sensitive data and ensure only authorized users can perform specific actions.

3. Requirement Analysis & Planning

3.1 Understanding Business Requirements

1. Service Workflow Management

- The system must support the full cycle of a service request: job card creation, technician assignment, repair status updates, and completion.
- Track multiple services simultaneously (engine repairs, oil changes, tire replacements, etc.).

2. Customer and Vehicle Data Management

- Ability to store and manage customer profiles, contact information, and service history.
- Maintain vehicle details such as make, model, VIN, registration number, and insurance details.

3. Appointment Scheduling and Reminders

- Let customers or staff schedule service appointments.
- Automated reminders via SMS or email for upcoming services or follow-ups.

3.2 Defining Project Scope & Objectives

Project Scope

Included Components

The Garage Management System (GMS) will implement the following Salesforce components:

- **Custom Objects:** Vehicle__c, Service_Booking__c, and Inventory__c with defined relationships to centralize customer, service, and parts data.
- **Duplicate Rules:** Prevent duplicate customer entries (matching on email/phone) and vehicle records (matching on VIN) to eliminate manual cleanup efforts.

- **Role Hierarchy:** A three-tier structure (Admin > Service Manager > Technician) to enforce approval workflows, such as discounts exceeding 15%.
- **Automation:** Flows for auto-assigning technicians and sending SMS/email appointment reminders to reduce no-shows.
- **Validation Rules:** Enforce mandatory fields like Mileage__c during service bookings to ensure data accuracy.
- **Reports & Dashboards:** Real-time tracking of daily appointments, revenue, and inventory levels for data-driven decisions.

Objectives

1. **Operational Efficiency:** Reduce appointment scheduling time by 50% (from 10 minutes to 5 minutes) through self-service portals and automated workflows. Track progress via time-tracking reports.
2. **Customer Experience:** Cut no-show rates by 25% using automated reminders (SMS/email) triggered 24 hours before appointments. Measure success through attendance analytics.
3. **Inventory Optimization:** Decrease stockouts by 40% by implementing real-time inventory alerts and reorder triggers. Monitor results via inventory turnover reports.
4. **Compliance:** Ensure 100% audit trails for financial transactions (SOX compliance) using Salesforce's built-in audit logging.

4. SALESFORCE DEVELOPMENT

4.1 Setup Environment

We established a robust Salesforce development environment using:

- **Developer Org Strategy:** Created Developer Org sandboxes for development and testing.

  link for creating the developer org https://developer.salesforce.com/signup

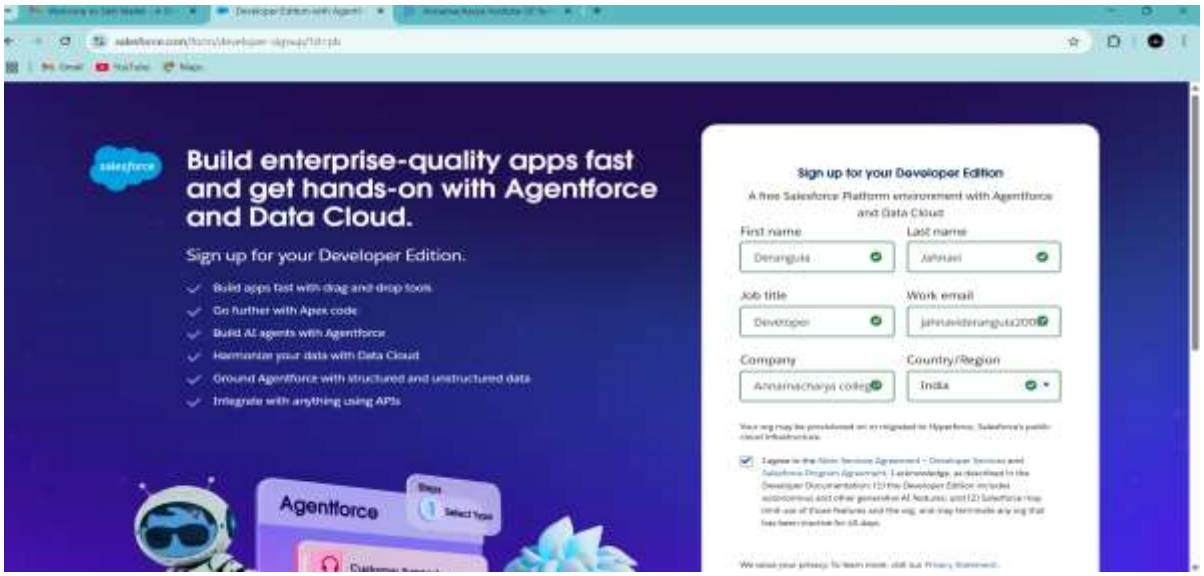


Fig: Signing up for a developer Org

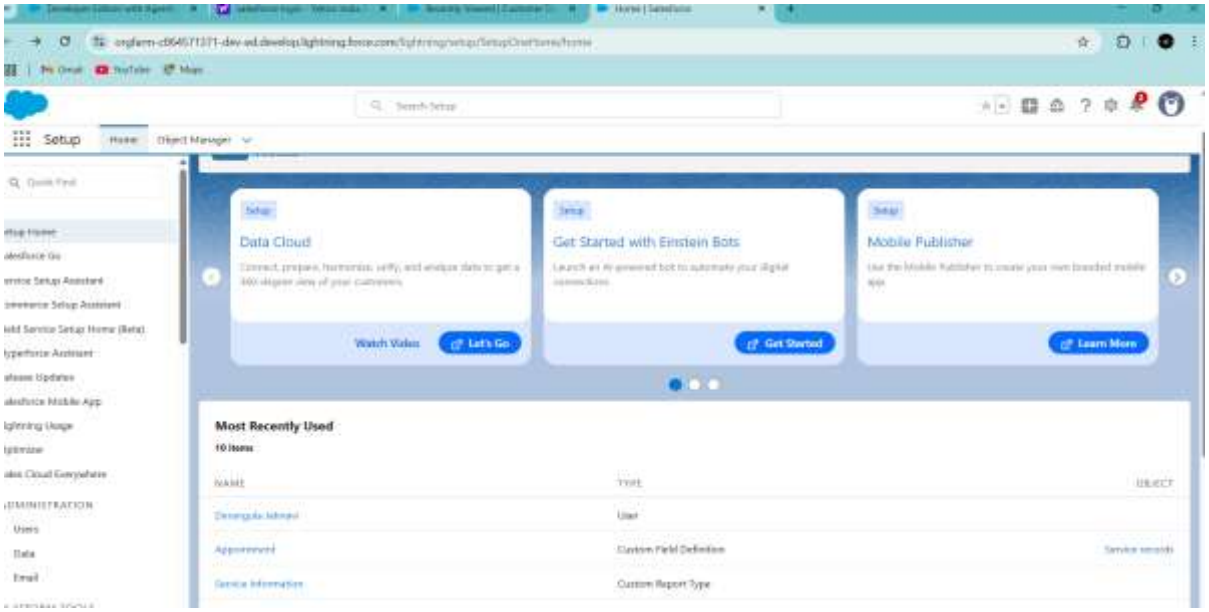


Fig: Developer Org Login

5. CUSTOMIZATIONS & AUTOMATION

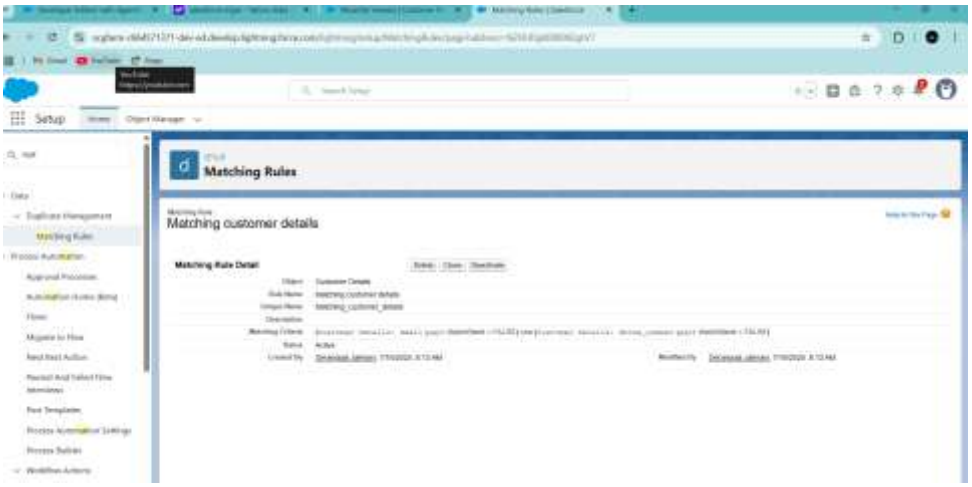
5.1 Core System Customizations

- **Custom Objects & Fields:**
  - Created Customer_Details__c and Appointment__c objects for creating customers and their appointments with the fields included:
    - Vehicle_number_plate_c for accessing vehicle number with a validation rule as "NOT(REGEX(Vehicle_number_plate__c , "[A-Z]{2}[0-9]{2}[A-Z]{2}[0-9]{4}"))".
    - Appointment_Date__c to select a particular date
  - Created Service_Records__c object for updating the service status records:
    - Lookup to Appointment__c to get details of appointment.
  - Created Billing_details_and_feedback__c object to update the bill status and feedback rating from the customer.
  - Added critical fields:
    - Service_Type__c (Checkbox)
    - Appontment_Date__c (Date)
    - Service_Date__c (Formula)
- **Validation Rules:**

Fig: Validation Rule for Vehicle_Number__c field

Fig: Validation Rule for Rating_for_service__c field

- **Duplicate Rules & Matching Rules:**



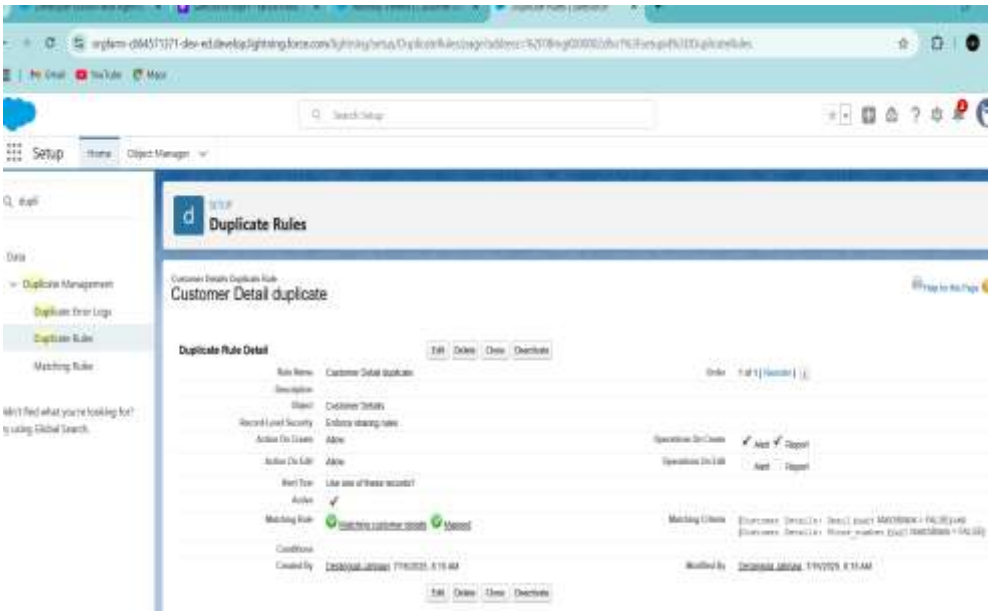


Fig: Duplicate and Matching Rules for Customer_Details__c object

6. AUTOMATION COMPONENTS

6.1 Flows:

- Billing amount flow is created to send an email alert. Whenever the payment status in Billing details and feedback record is updated as completed for a particular service records the flow automatically sends an email alert as Thank You for Your Payment - Garage Management.
- The Update service status flow is designed for a purpose of updating the service status as completed when the quality service checkbox is selected when editing the service records.

Fig: Billing Amount Flow

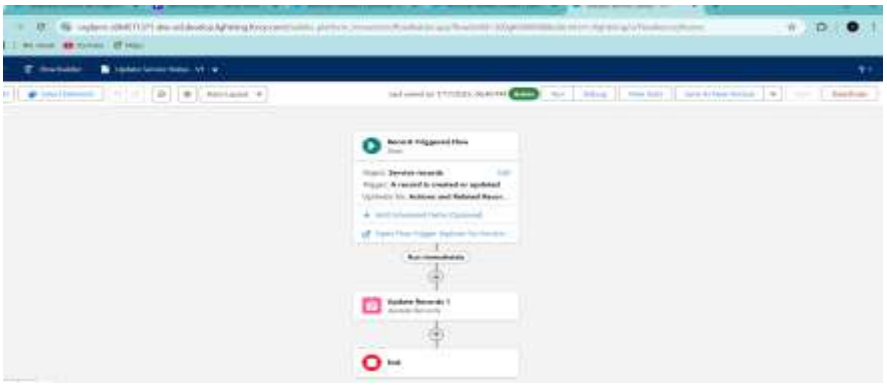


Fig: Update Service Status Flow

6.2 Apex Development:

- ApextDistributionHandler apex code to automatically update the Amount records without entering by manually as per the user selection for the services.

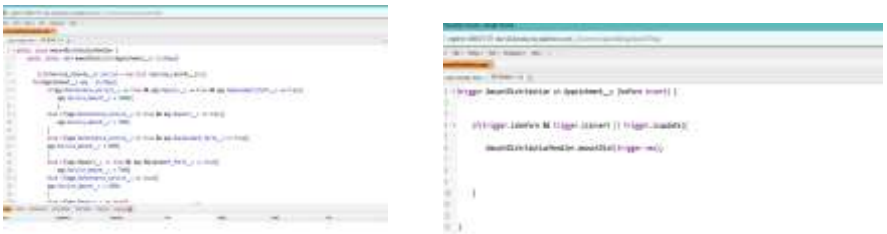


Fig: ApexDistrubitionHandler code & ApexDistribution Trigger

7. KEY FEATURES AND FUNCTIONALITIES

The Garage Management System's core functionality suite delivers a comprehensive set of tools designed to revolutionize garage operations management, leveraging Salesforce's robust automation capabilities.

7.1 Work Order Management (Appointment & Service Records)

The system meticulously manages the lifecycle of a service request:

- Appointment Scheduling: Allows customers to book appointments, capturing essential details like customer information, desired service types (Maintenance, Repairs, Replacement Parts), and vehicle number plates. The Appointment Date is a crucial field, ensuring all necessary information is collected upfront.
- Dynamic Service Amount Calculation: Based on the services selected during appointment creation (Maintenance, Repairs, Replacement Parts), an Apex Trigger dynamically calculates and populates the Service Amount field. This ensures accurate upfront estimates.
- Service Execution Tracking: Once an appointment is confirmed, a Service record is created, automatically assigned a unique ser-{000} ID. The Service Status defaults to 'Started'.
- Quality Control Checkpoints: The Quality Check Status checkbox on the Service records object allows technicians to confirm critical quality checks have been performed.
- Automated Status Update: Upon marking Quality Check Status as true, the Service Status automatically updates to 'Completed', providing real-me visibility into service progression.
- Lookup Filter for Service Records: A validation on the Appointment lookup ensures that the Appointment Date for a service record is logically less than the Service records Created Date, maintaining data integrity.

7.2 Customer Management

- Centralized Customer Profiles: The Customer Details object acts as a single source of truth for all customer information, including contact details (Phone number, Gmail) and a unique Customer Name.
- Relationship Tracking: All appointments, service records, and billing details are linked back to the Customer Details, providing a comprehensive view of a customer's history with the garage. This enables personalized service delivery and proactive communication.

7.3 Billing & Feedback

- Automated Billing Integra on: The Billing details and feedback object captures payment information. The Payment Paid field is designed to be populated automatically via a Flow when the Payment Status is 'Completed', drawing the amount from the related Service Amount on the Appointment.
- Payment Status Tracking: A picklist field (Payment Status) allows for clear tracking of billing states ('Pending', 'Completed').

- Customer Feedback Collection: The Ra ng for service (1-5) field on the Billing details and feedback object provides a direct mechanism for customers to rate their experience, enabling continuous service improvement.

7.4 Dynamic Service Pricing (Apex)

The AmountDistributionHandler Apex class, triggered before insert and before update on the Appointment__c object, implements the business logic for calculating the Service_Amount__c based on the selected services:

- Logic:
  - Maintenance, Repairs, and Replacement Parts: $10,000
  - Maintenance and Repairs: $5,000
  - Maintenance and Replacement Parts: $8,000
  - Repairs and Replacement Parts: $7,000
  - Maintenance Service only: $2,000
  - Repairs only: $3,000
  - Replacement Parts only: $5,000

This ensures that the service amount is dynamically calculated and displayed to the customer based on their selections.

7.5 Automated Email Notifications (Flow)

A Record-triggered Flow on the Billing details and feedback object automates customer communication:

- Trigger: When a Billing details and feedback record is Created or Updated.
- Condition: Executes only when Payment_Status__c is 'Completed'.
- Action:
  1. Update Records: Sets the Payment_Paid_c field on the Billing details and feedback record to the value of Service_Amount_c from the related Appointment_c record.
  2. Email Alert: Sends a personalized "Thank You for Your Payment" email to the customer using their Gmail_c from the Customer Details record. The email includes the customer's name and the Amount paid. This enhances customer experience and provides automated confirmation.

8. UI/UX DEVELOPMENT & CUSTOMIZATION

8.1 Lightning App Setup

8.1.1 Custom App Configuration

- Created "Garage Management Application" Lightning App for accessing all objects, reports and dashboards as follows:

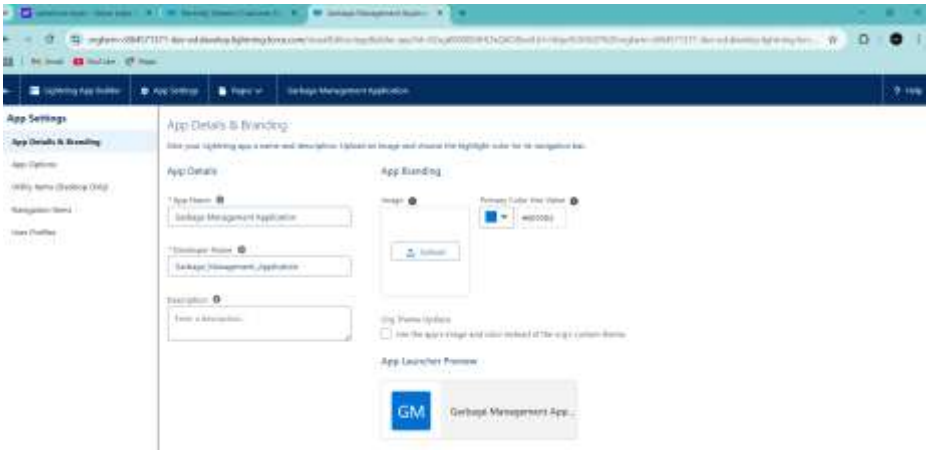


Fig: Lightning app Structure

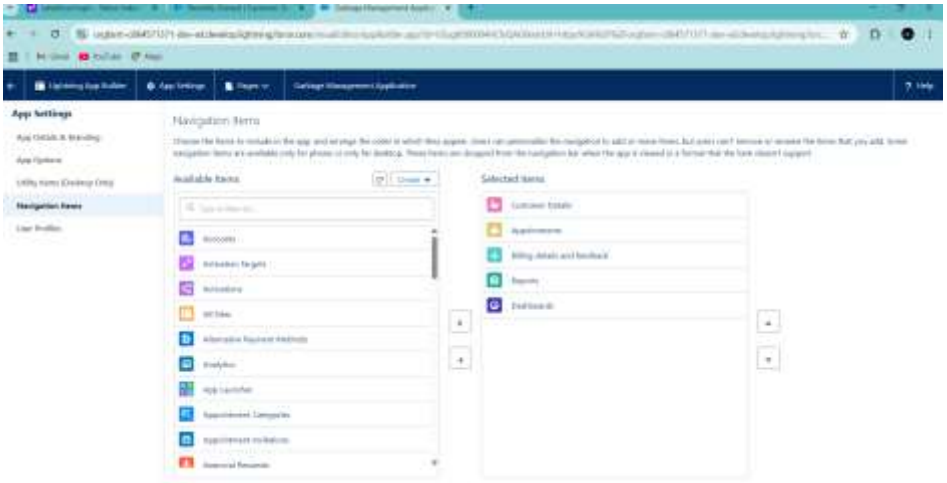


Fig: Objects under Garage Management Application

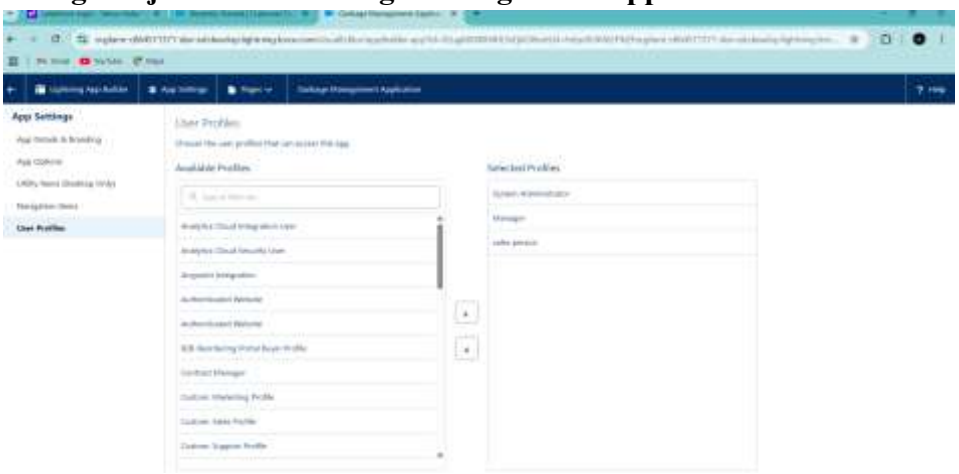


Fig: Users Who access the Application

8.2 Reports & Dashboards

8.2.1 Reports

The “New service information Report” is created to display the services payments details summary and a chart representing the ratio between the rating given by customers while payment and number of payments rated same.In a Garage Management System (GMS) application built on Salesforce, reports serve a vital purpose by providing real-time insights into various aspects of the garage’s operations. These reports help track service requests, monitor technician performance, analyze sales and revenue, and manage inventory efficiently.

By leveraging Salesforce’s powerful reporting and dashboard features, garage owners and managers can make informed decisions based on accurate data. Reports also offer valuable customer insights, allowing for better service personalization and targeted marketing efforts. Additionally, they support operational transparency, compliance tracking, and long-term forecasting, enabling the business to grow strategically. Overall, reports in a Salesforce-based GMS enhance visibility, productivity, and customer satisfaction.

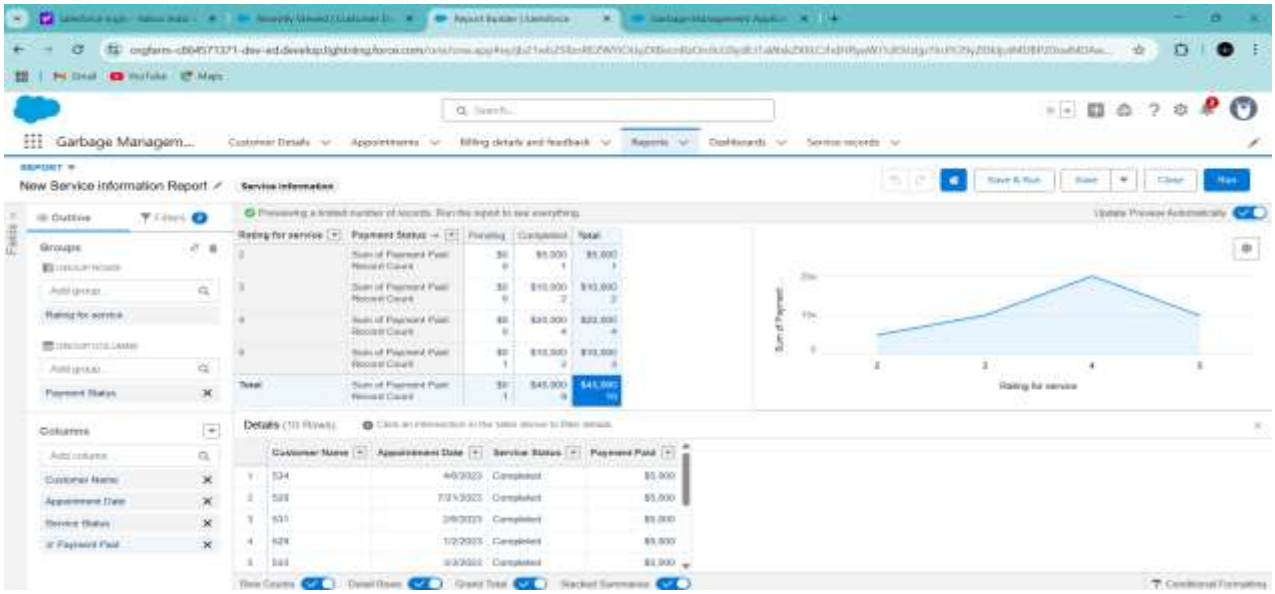


Fig:Reports

Furthermore, employee productivity reports can be used to evaluate staff efficiency and allocate resources more effectively. Reports also assist in compliance by maintaining digital records required for audits or legal purposes. In the long term, trend and forecasting reports help the garage anticipate demand, optimize marketing strategies, and plan for business expansion. Overall, Salesforce reports in a GMS application empower stakeholders to improve efficiency, boost profitability, and deliver high-quality customer experiences.

8.2.2 Dashboards

The “Customer Review” dashboard is as similar as report without the other data rather than line chart. The line chart of “New service information report” is displayed as a widget in the dashboard.

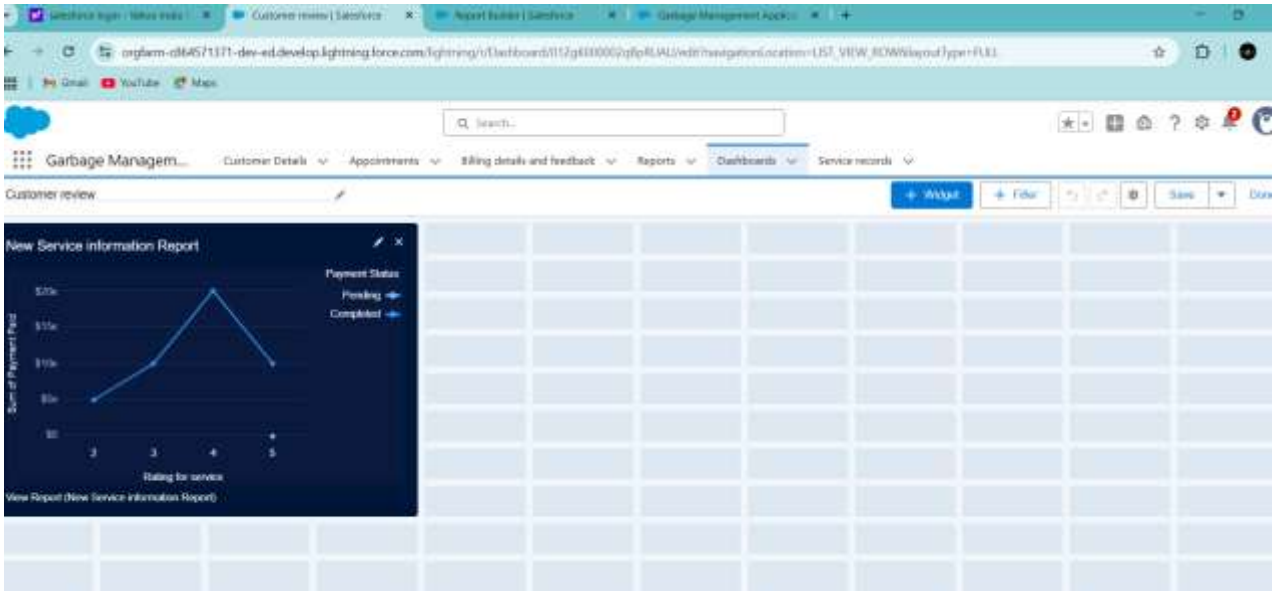


Fig: Customer Review Dashboard

In a Garage Management System (GMS) application built on Salesforce, dashboards serve the purpose of providing a real-time visual representation of key performance indicators (KPIs) and operational data in a centralized, user-friendly format. Dashboards enable garage owners, managers, and service staff to monitor business health at a glance, track service progress, and quickly identify areas needing attention or improvement.

They present data from multiple reports in the form of charts, graphs, and tables, helping stakeholders visualize trends such as service volume, revenue, customer satisfaction, inventory levels, and technician productivity. For instance, a dashboard might display the number of vehicles serviced per day, sales from spare parts, or customer feedback ratings—allowing decision-makers to act swiftly and strategically

9. CONCLUSION

In conclusion, the Garage Management System application in Salesforce offers a comprehensive and efficient solution for managing all aspects of garage operations. By integrating core functions such as service scheduling, customer management, inventory tracking, billing, and reporting into a unified platform, it enhances productivity, accuracy, and customer satisfaction.

The powerful features of Salesforce, including real-time reports and interactive dashboards, empower garage owners and staff to make informed decisions, monitor performance, and respond quickly to operational needs. With automation, scalability, and cloud-based accessibility, the application supports seamless collaboration, improved service delivery, and long-term business growth. Overall, implementing a Garage Management System in Salesforce transforms traditional garage management into a streamlined, data-driven, and customer-focused operation.

Overall, a Garage Management System in Salesforce is not just a tool for service tracking, but a strategic asset that drives digital transformation, increases profitability, ensures transparency, and positions the business for sustainable growth in a competitive automotive service industry.