Garage Management System

1. Project Overview

The **Garage Management System (GMS)** is a cloud-based solution developed using Salesforce to streamline and automate the operational processes of vehicle service garages. The system is designed to address common challenges faced by garages, such as inefficient scheduling, manual job tracking, and lack of centralized customer data. By leveraging Salesforce's powerful CRM capabilities, GMS provides a unified platform for managing customers, vehicles, appointments, job cards, invoicing, and reporting.

The system enhances operational efficiency through automation and offers real-time visibility into service workflows. Customers benefit from a self-service portal that allows them to book appointments, view service history, and receive updates, while garage staff can monitor job progress and manage resources more effectively. In addition to core functionality, the system integrates with third-party services like SMS and payment gateways to ensure seamless communication and financial transactions.

The modular design of GMS allows for future scalability, including potential enhancements such as mobile app integration and AI-driven maintenance recommendations. This project aims to deliver a robust, secure, and user-friendly system that not only meets the immediate needs of garage operations but also positions the business for future growth and innovation.

2. Objectives

The primary objectives of the **Garage Management System (GMS)** are focused on automating manual processes, enhancing customer experiences, improving operational efficiency, and providing actionable insights. The detailed objectives are as follows:

Business Goals :

1. **Increase Operational Efficiency:**

   Automate and streamline garage operations, reducing the time spent on manual tasks like appointment scheduling, invoicing, and job tracking. This will enable staff to focus more on customer service and technical work, leading to improved overall productivity.

2. **Enhance Customer Satisfaction:**

   Provide customers with a seamless, user-friendly experience, from appointment booking to job completion. By offering easy access to their service history, real-time updates, and automated reminders, GMS aims to improve customer engagement and loyalty.

3. **Boost Revenue and Profitability:**

   By improving operational efficiency, increasing customer satisfaction, and enabling the management team to better track service revenue and costs, the GMS aims to drive growth in revenue. Automation of invoicing and payment processing will also reduce delays and improve cash flow.

4. **Improve Data Accuracy and Decision-Making:**

   Centralizing customer, vehicle, and service data will eliminate errors associated with manual data entry and provide managers with actionable insights for better decision-making. The system's reporting and analytics capabilities will support data-driven strategies.

5. **Support Scalability and Future Growth:**

   The system will be designed to scale as the business grows, allowing easy expansion to new locations or additional services. The ability to integrate new

features (like mobile apps or IoT integration) ensures that the GMS will evolve alongside the business.

Specific Outcomes:

1. **Fully Functional Garage Management System:**

   A cloud-based solution built on Salesforce, providing all necessary features, including customer management, appointment scheduling, job tracking, billing, and reporting.

2. **Centralized Customer and Vehicle Database:**

   A comprehensive database that consolidates all customer and vehicle information in one place, ensuring easy access to data for staff and reducing the risk of duplication or errors.

3. **Automation of Key Business Processes:**

   Automated workflows for tasks like job card creation, appointment reminders, payment processing, and customer notifications, reducing manual effort and increasing process accuracy.

4. **Real-Time Reporting and Dashboards:**

   Custom reports and dashboards that provide insights into garage performance, service profitability, technician productivity, and customer satisfaction, helping managers make informed business decisions.

5. **Customer Self-Service Portal:**

   A portal where customers can easily book, reschedule, and track their appointments, as well as view service history and receive updates, improving transparency and engagement.

6. **Seamless Integration with Third-Party Services:**

Integration with external systems such as payment gateways and SMS/email services to streamline financial transactions and enhance communication.

7. **User Training and Support Documentation:**

Comprehensive training materials and user guides for staff to ensure smooth adoption and effective use of the system, alongside on-going technical support.

3. Detailed Steps to Solution Design

1. **Custom Objects and Fields:**

Salesforce's flexibility in creating custom objects and fields is essential for managing specific data related to garage operations that go beyond the standard CRM objects.

Custom objects:

In the **Garage Management System (GMS)**, several **custom objects** are used to effectively track and manage key aspects of the garage's operations, such as customer details, appointments, service records, billing, and feedback. These objects help ensure the system is customized to the garage's workflow and provides efficient data management and reporting.

1. Customer Details

This custom object stores all relevant information about the customer, including personal contact details and vehicle-specific data. It ensures a comprehensive view of each customer's service history and preferences.

2. Appointment

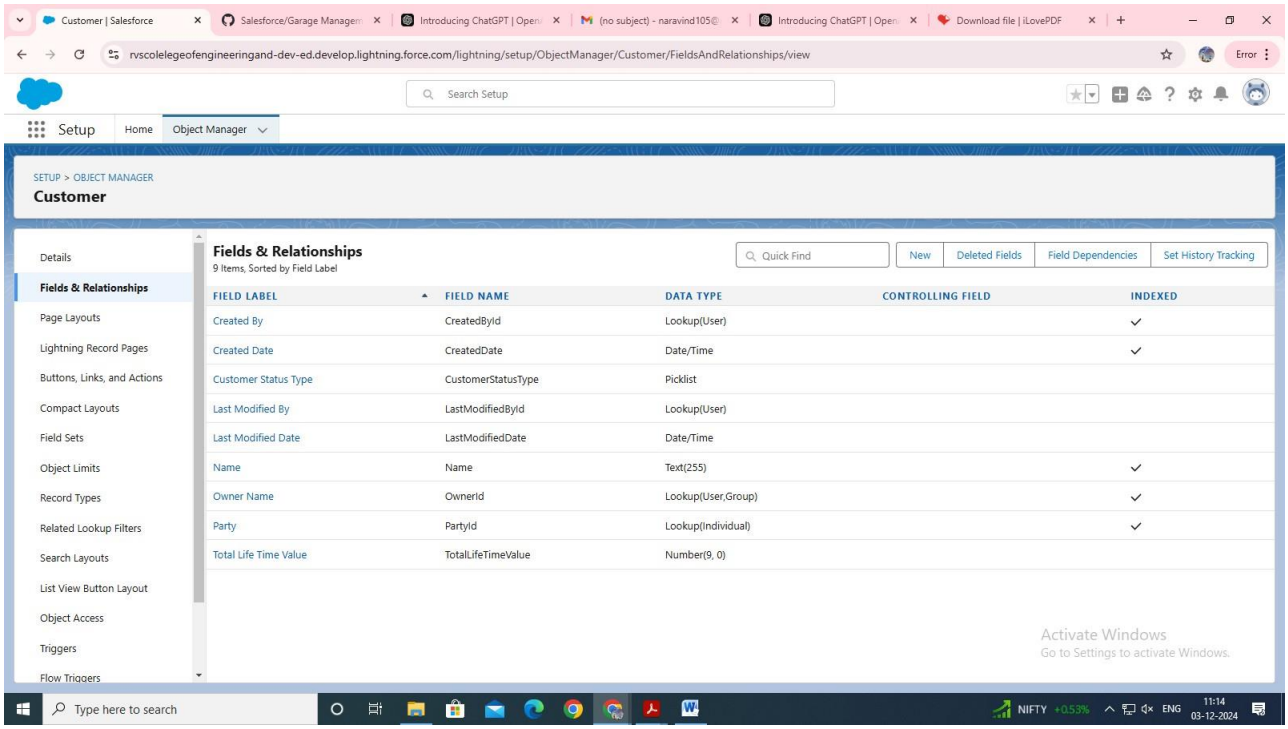
The **Appointment** custom object is used to manage and track customer appointments for services. It captures key details about each appointment, including the scheduled service, the technician assigned, and the status of the appointment.

3. Service Records

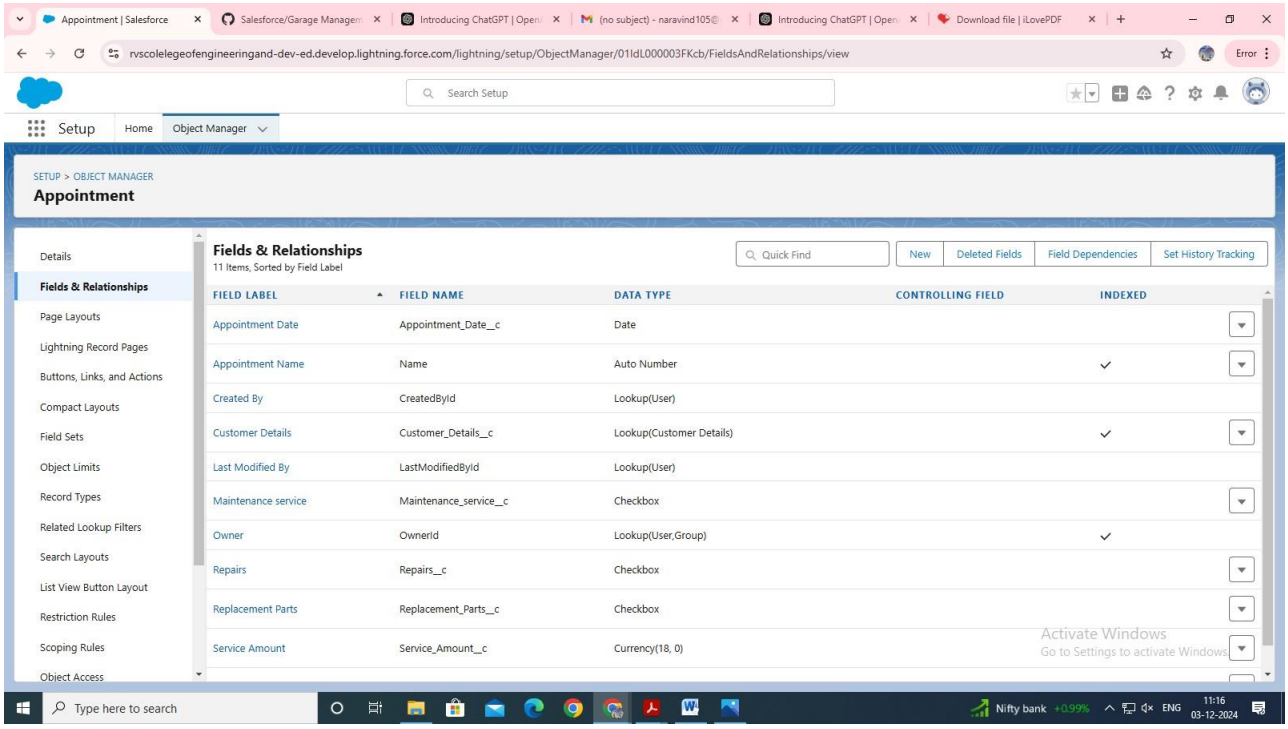
The **Service Records** custom object tracks the details of each service performed on a customer's vehicle. This includes the tasks completed, parts used, and technician notes, providing a detailed log of each service interaction.

4. Billing Details and Feedback

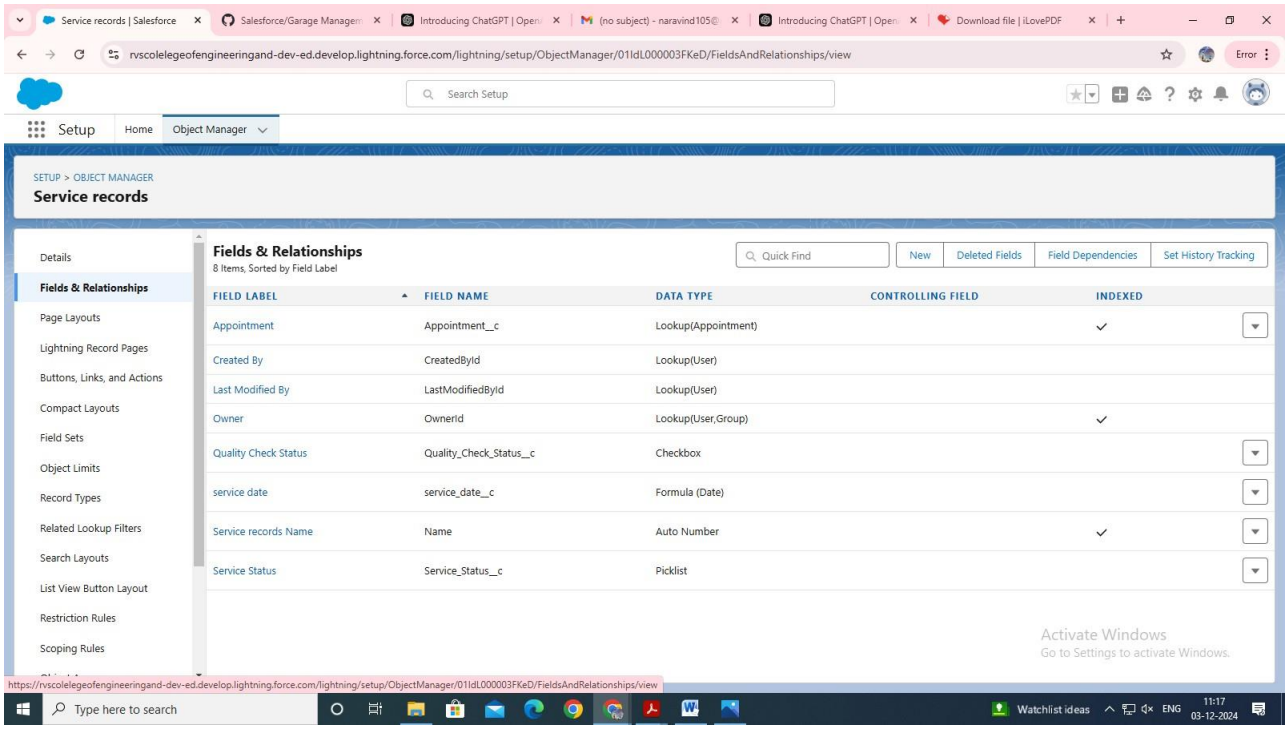
The **Billing Details** custom object manages financial transactions. It ensures accurate billing and payment processing for each job completed .The **Feedback** custom object allows customers to provide feedback on the service they received. This data is used to assess customer satisfaction and improve service quality by collecting ratings and comments on the garage's performance.



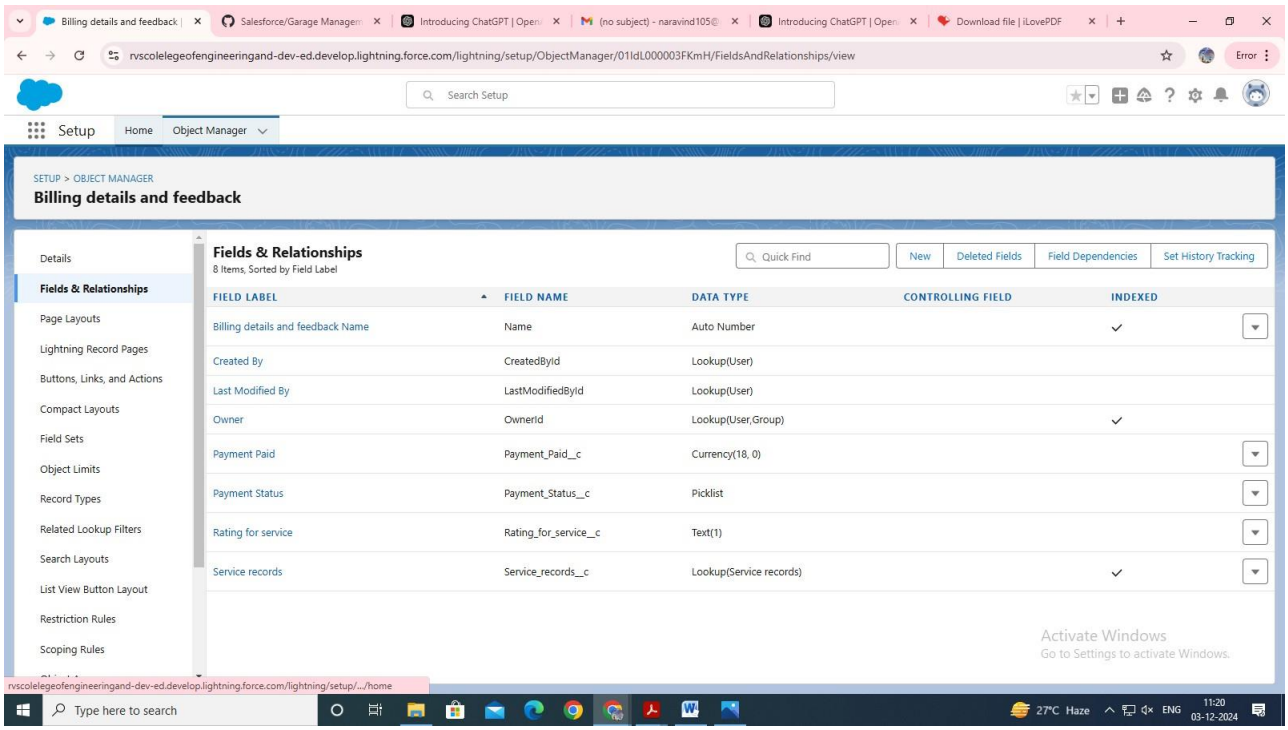
Customer Details



Appointment



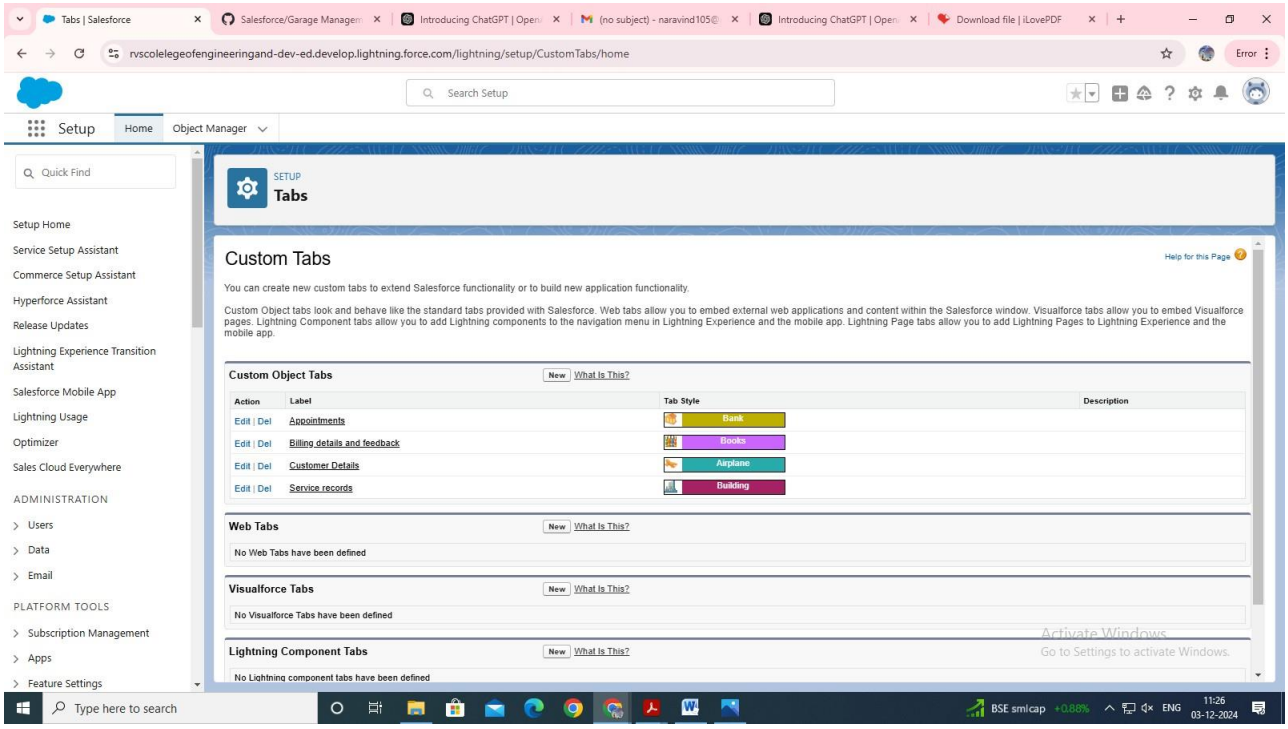
Service Records



Billing details and feedback

2.Tabs:

Custom object tabs are the user interface for custom applications that you build in salesforce.com. They look and behave like standard salesforce.com tabs such as accounts, contacts, and opportunities.

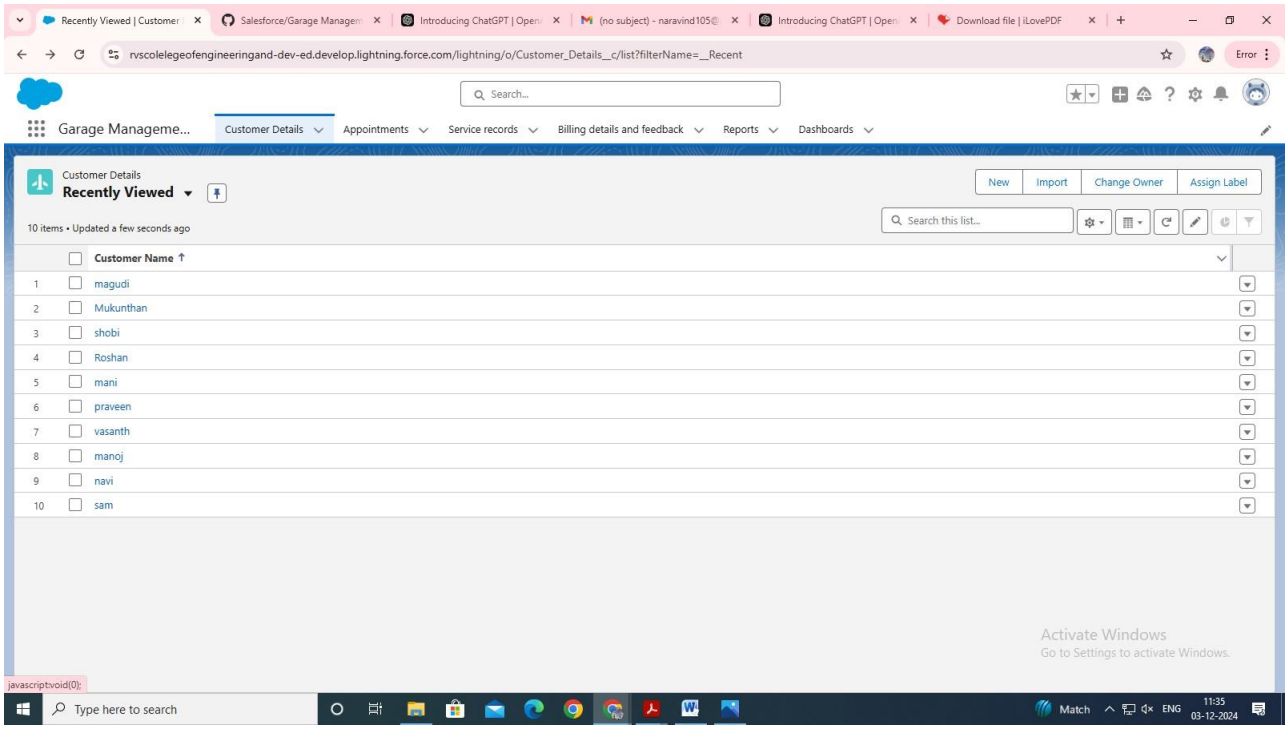


Custom Tabs

3.The Lightning App:

An app is a collection of items that work together to serve a particular function. In Lightning Experience, Lightning apps give your users access to sets of objects, tabs, and other items all in one convenient bundle in the navigation bar. Lightning apps let you brand your apps with a custom colour and logo. You can even include a utility bar and Lightning page tabs in your Lightning app. Members of your org can work more efficiently by easily switching between apps.

In the GMS mode we will include the custom objects that we created, Customer detais , Appointment , Service Records ,Billing and Feedback details.



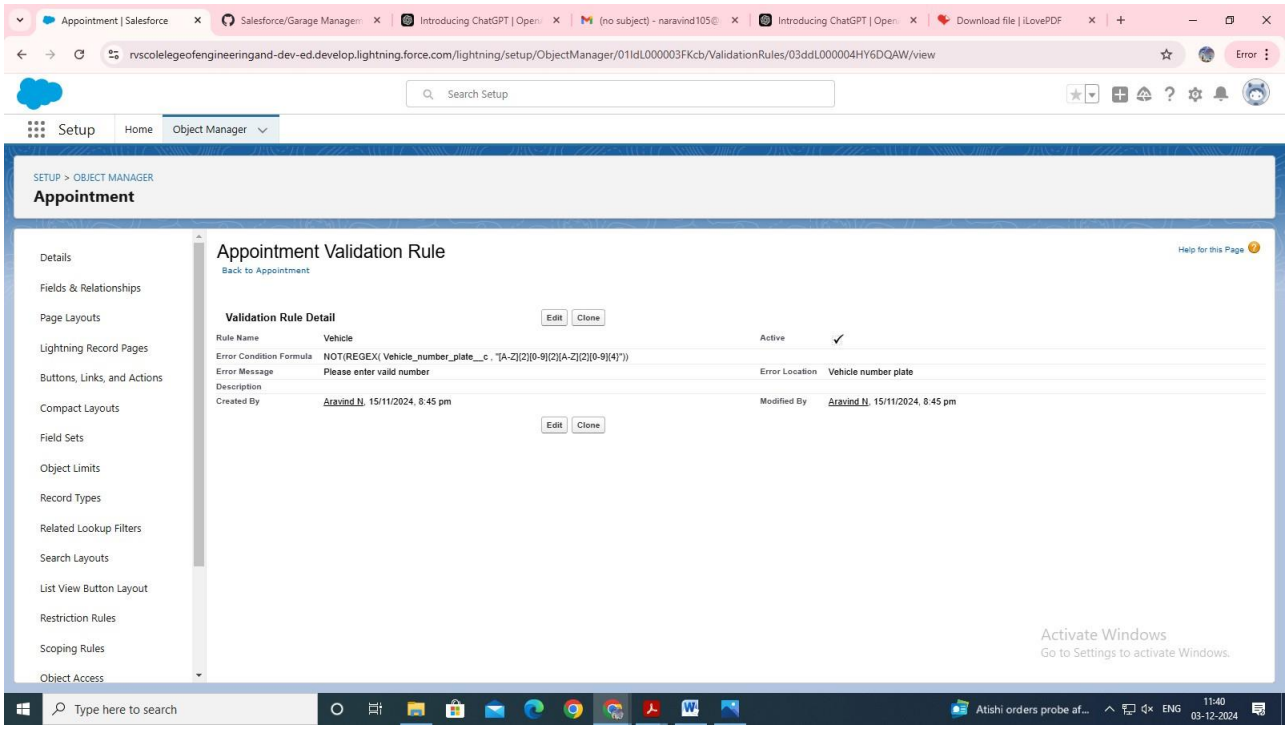
Lightning App

4.Validation Rule:

Validation rules are applied when a user tries to save a record and are used to check if the data meets specified criteria. If the criteria are not met, the validation rule triggers an error message and prevents the user from saving the record until the issues are resolved.

In the GMS model we use validation rule to check the number plate of the vehicle

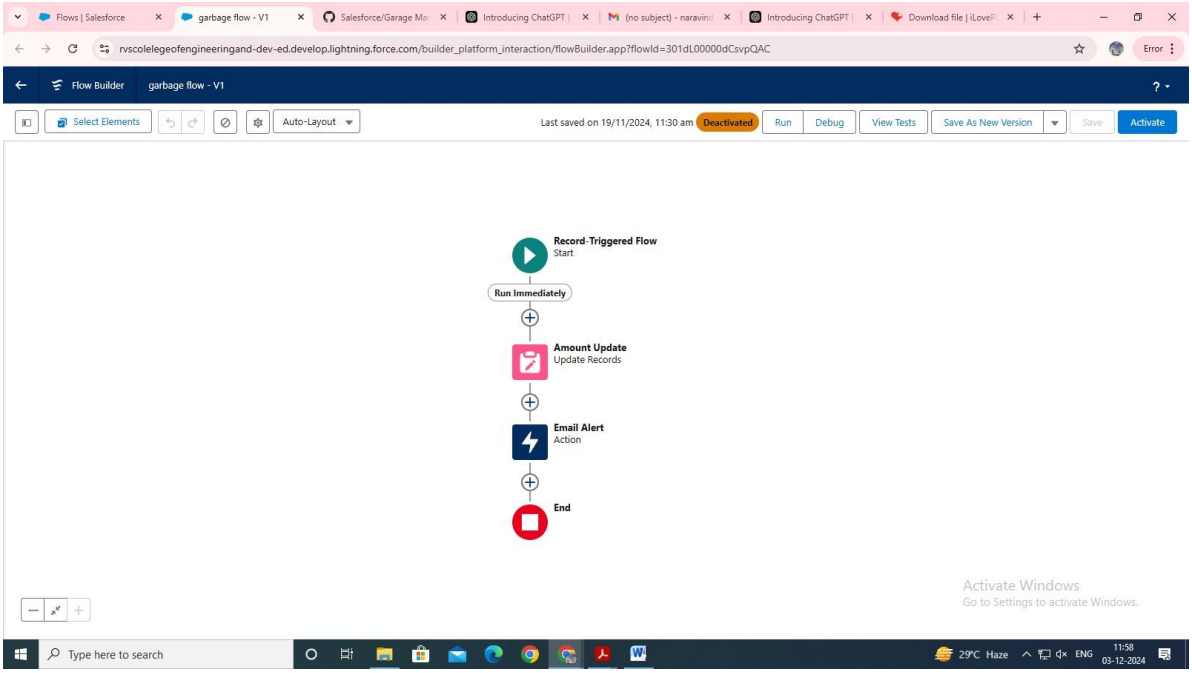
Formula-NOT(REGEX(Vehicle_number_plate_c , "[A-Z]{2}[0-9]{2}[A-Z]{2}[0-9]{4}")).



Validation Rule for Vehicle number plate

5.Flows:

In Salesforce, a flow is a powerful tool that allows you to automate business processes, collect and update data, and guide users through a series of screens or steps.



Flows are built using a visual interface and can be created without any coding knowledge.

4. Testing and Validation:

Testing and validation are critical phases in the development and deployment of the Garage Management System (GMS). This process ensures that the system meets the functional and non-functional requirements, performs reliably under various conditions, and provides a seamless experience for both users and customers. The testing phase involves various types of tests to ensure system reliability, security, and performance. Here's an overview of the testing and validation approach for the GMS.

1. Unit Testing:

Unit testing focuses on testing individual components or functions of the Garage Management System. It ensures that each part of the system, such as appointment creation, service record generation, or invoice generation, behaves as expected. Unit testing is usually performed by developers during the development phase to catch any early bugs.

- **Objective:** Verify that each function works independently as expected.
- **Tools** : Salesforce's built-in testing framework (**Apex tests**), Selenium (for UI testing).

Apex class:

An **Apex class** in Salesforce is used to implement custom logic and functionality in the**GMS**. Apex allows you to write back-end code to handle operations such as service appointment scheduling, job card creation, and invoice generation. Below is an example of an Apex class that can be used in the Garage Management System to automate certain tasks, such as creating a service record after an appointment is made.

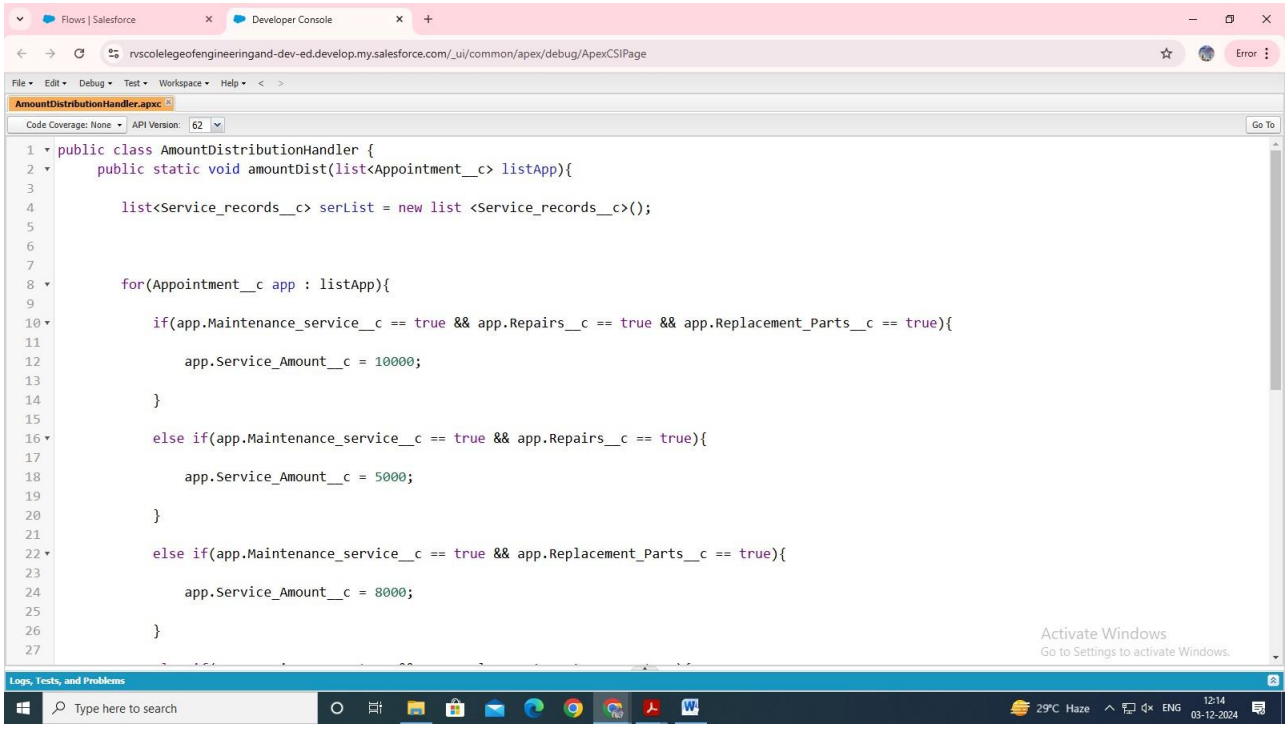
Code:

```
public class AmountDistributionHandler {

public static void amountDist(list<Appointment_c>listApp){
    list<Service_records_c>serList = new list <Service_records_c>();

    for(Appointment__c app : listApp){
      if(app.Maintenance_service_c == true &&app.Repairs_c == true
&&app.Replacement_Parts_c == true){
        app.Service_Amount__c = 10000;
      }
      else if(app.Maintenance_service_c == true &&app.Repairs_c == true){
        app.Service_Amount_c = 5000;
      }
      else if(app.Maintenance_service__c == true &&app.Replacement_Parts__c ==
true){
        app.Service_Amount__c = 8000;
      }
      else if(app.Repairs_c == true &&app.Replacement_Parts_c == true){
        app.Service_Amount_c = 7000;
      }
      else if(app.Maintenance_service_c == true){
        app.Service_Amount_c = 2000;
      }
      else if(app.Repairs_c == true){
        app.Service_Amount__c = 3000;
      }
      else if(app.Replacement_Parts_c == true){
        app.Service_Amount_c = 5000;
      }

  }
  }
}
```



Apex Tigger:

An **Apex Trigger** in Salesforce is used to automatically perform actions when certain events (such as insertions, updates, or deletions) occur on Salesforce objects. For the **GMS** an Apex trigger can be used to perform actions like creating a service record after an appointment is made or updating an appointment's status when a service is completed.

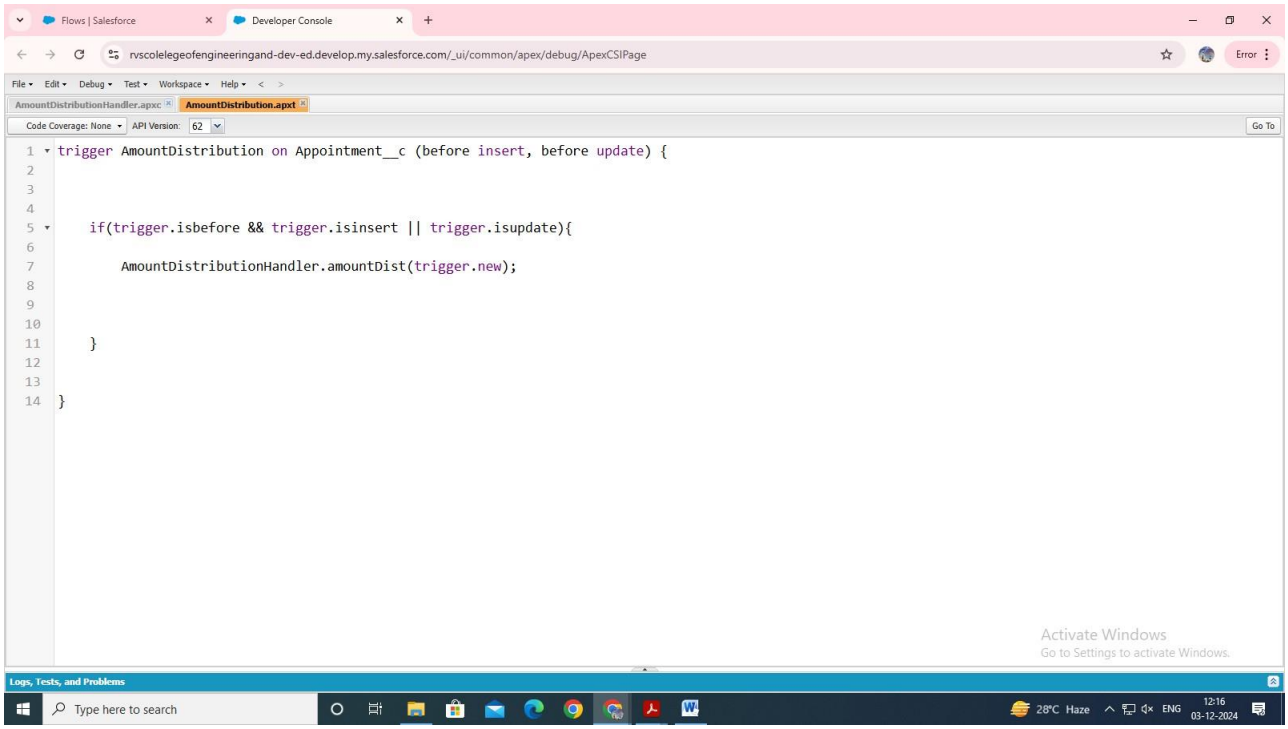
Code:

```
        triggerAmountDistribution on Appointment__c (before insert, before update) {

  if(trigger.isbefore&&trigger.isinsert || trigger.isupdate){
     AmountDistributionHandler.amountDist(trigger.new);

        }


   }
```



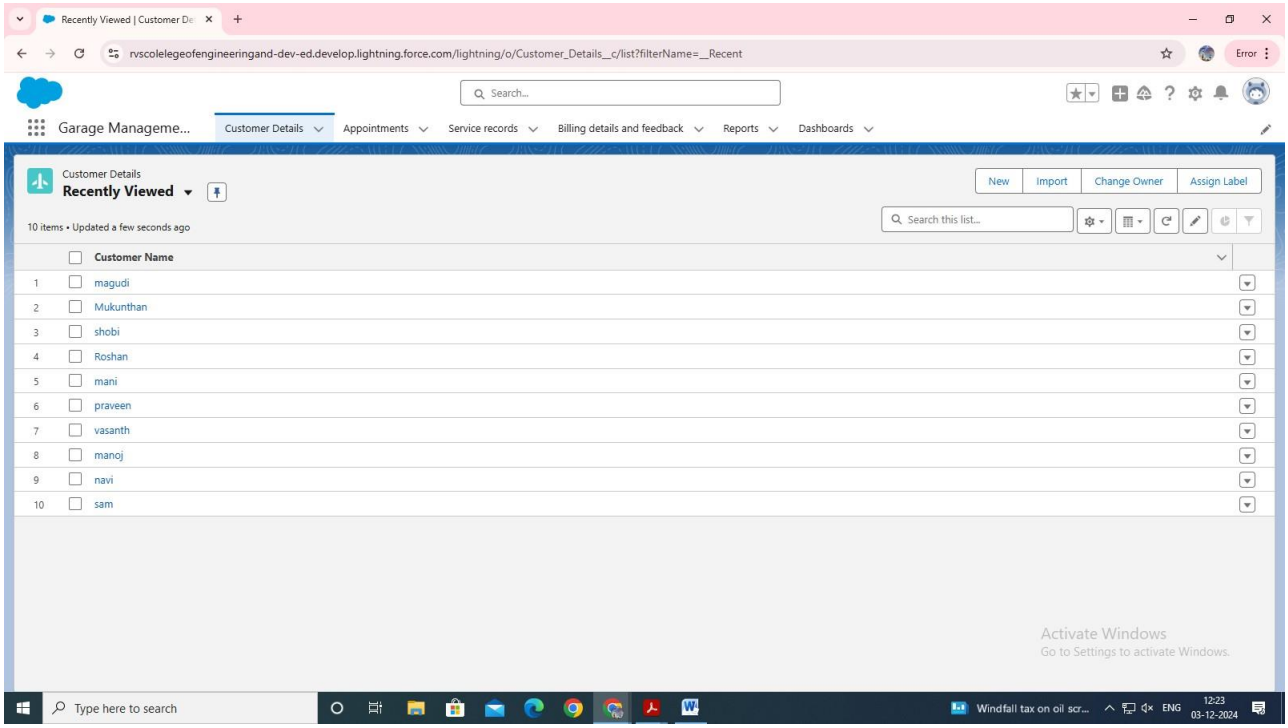
Reports:

Reports give you access to your Salesforce data. You can examine your Salesforce data in almost infinite combinations, display it in easy-to-understand formats, and share the resulting insights with others. Before building, reading, and sharing reports, review these reporting basics.

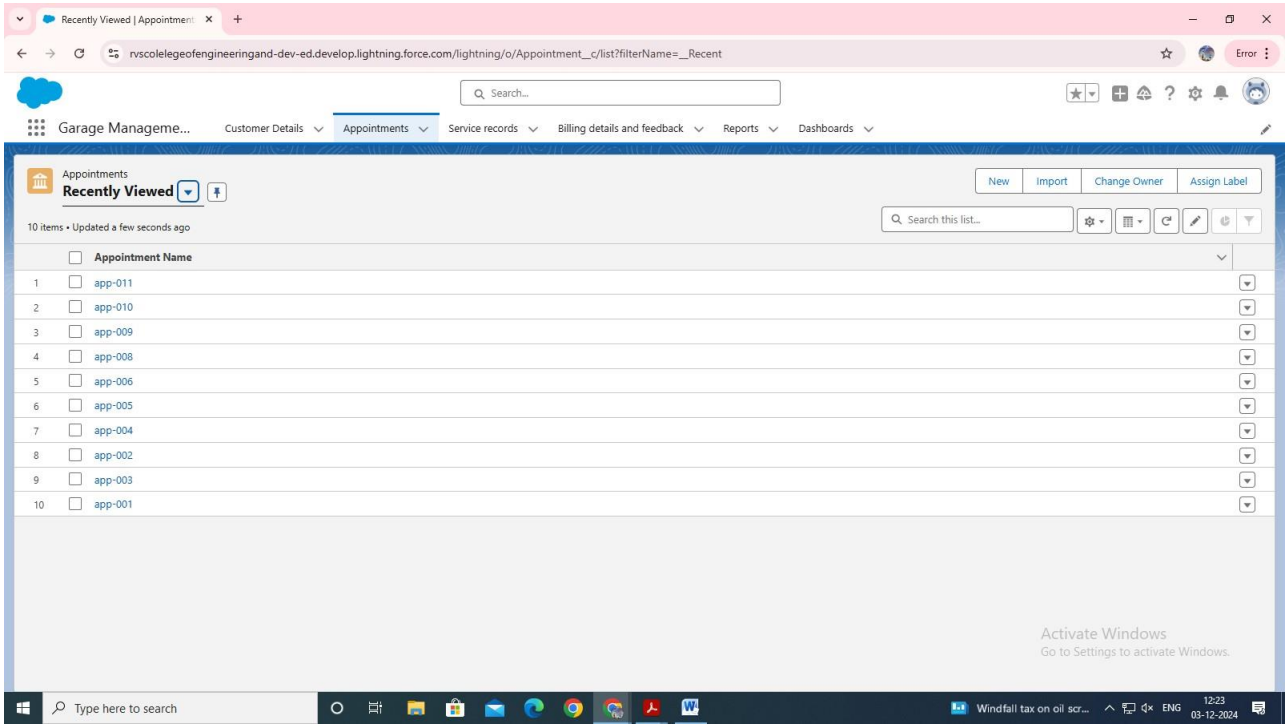
In the Garage Management System, custom reports are crucial for monitoring and analyzing various aspects of the business, such as appointments, service records, and billing details. To ensure that these reports provide meaningful insights, it is important to create at least 10 records for each custom report. For example, in a report tracking service appointments, we would generate a minimum of 10 unique appointments, including different customers, service types, appointment dates, and statuses.

Similarly, a service records report would require 10 distinct service records, each linked to an appointment, detailing the service performed, assigned technician, and the cost incurred. By generating a minimum of 10 records for each report, we ensure that the data displayed is comprehensive, realistic, and useful for decision-making, trend analysis, and performance evaluation.

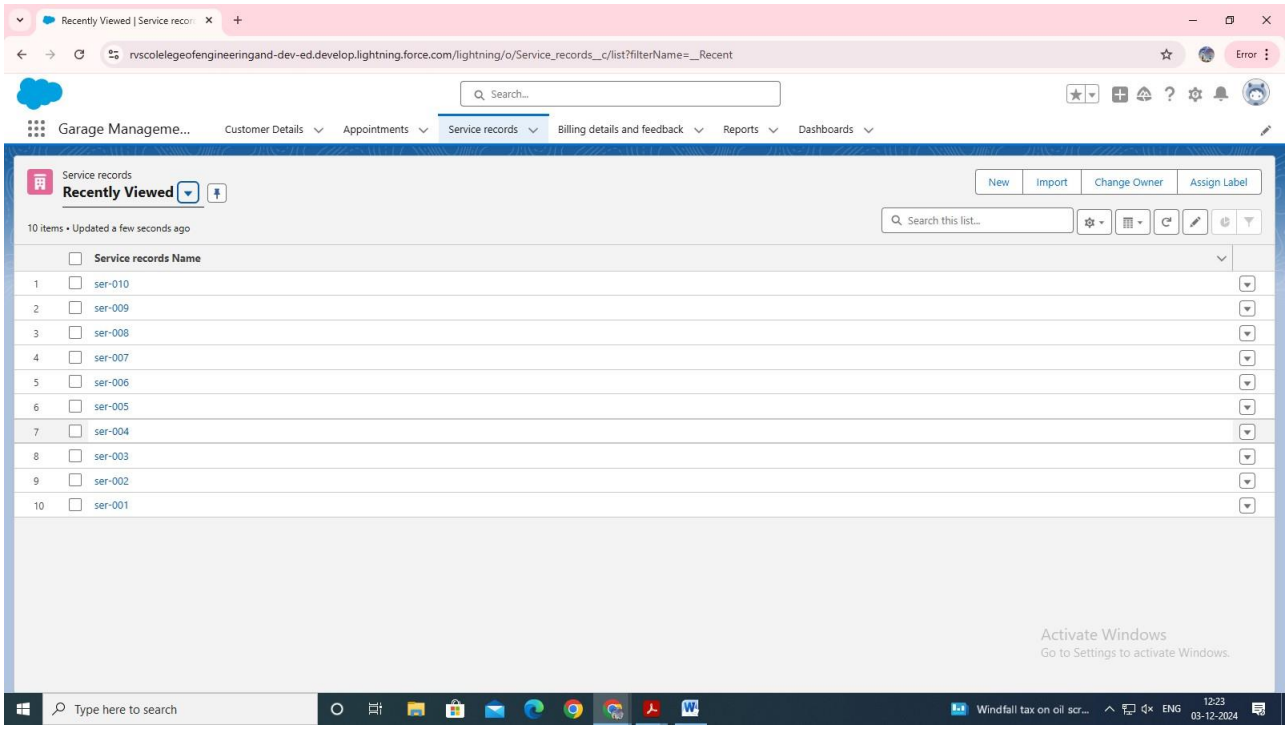
These records will provide a sufficient data set to demonstrate the effectiveness of the system's reporting capabilities, allowing stakeholders to gain valuable insights and make informed decisions based on the system's operations.



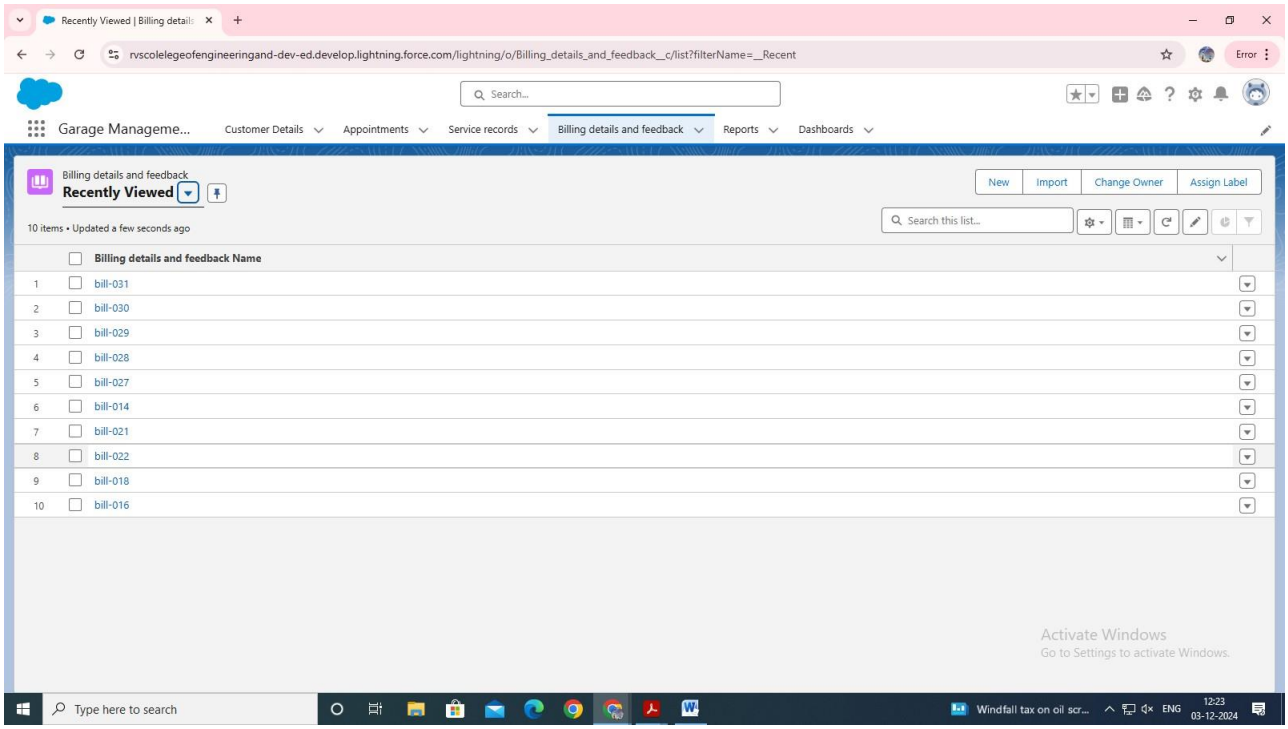
Records for Customer details



Records for Appointments

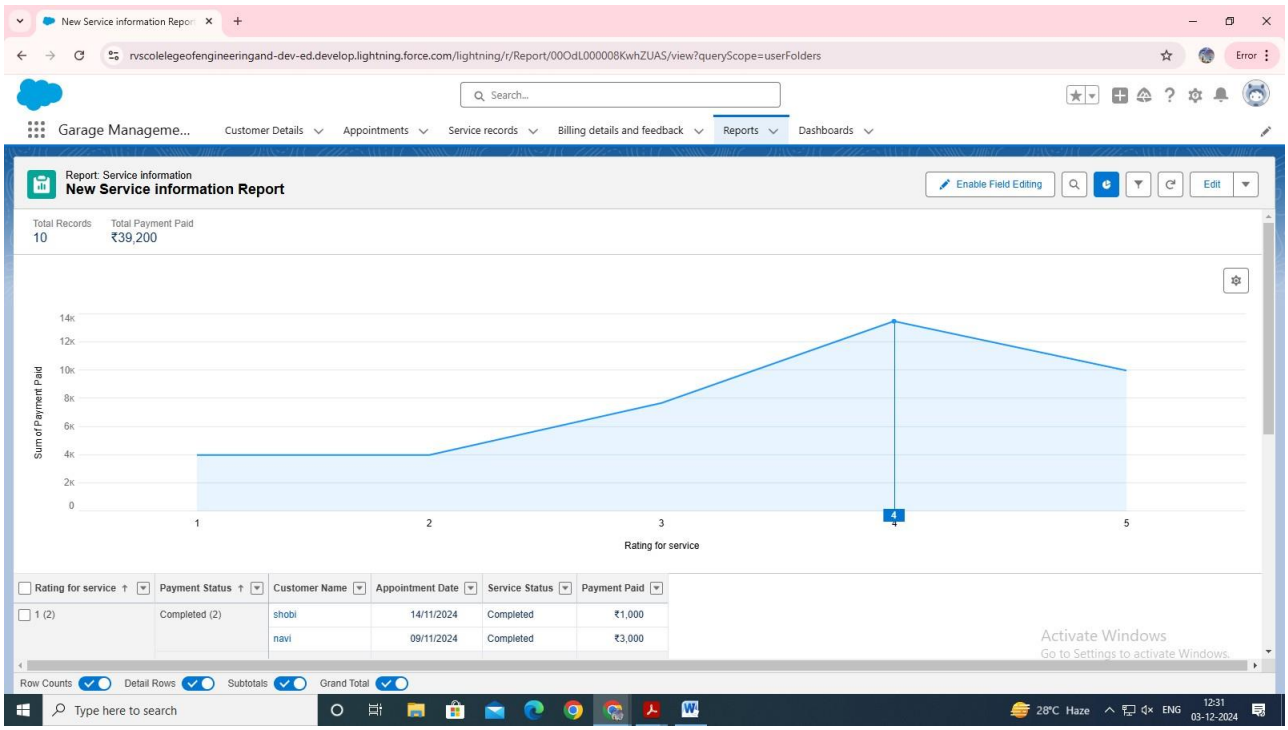


Records for Service Records

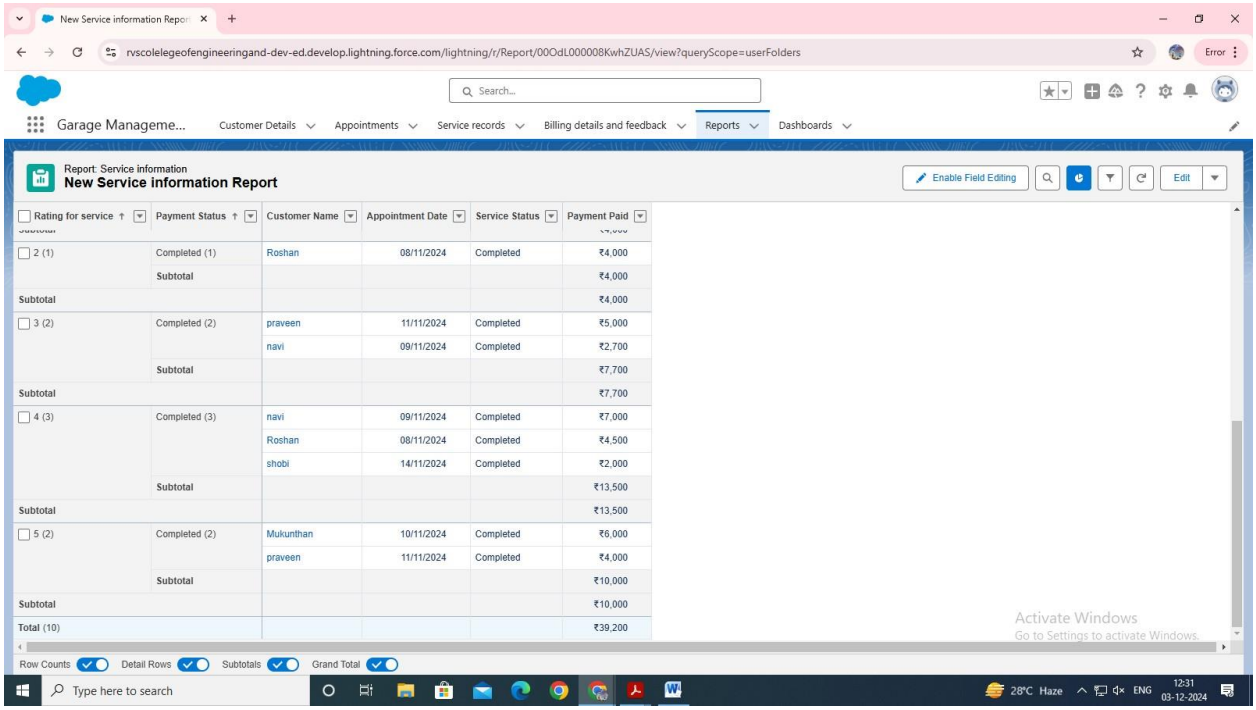


Records for Billing details and Feedback

After creating the records on each custom fields,we can start by generating the reports of the details provided by the customer.

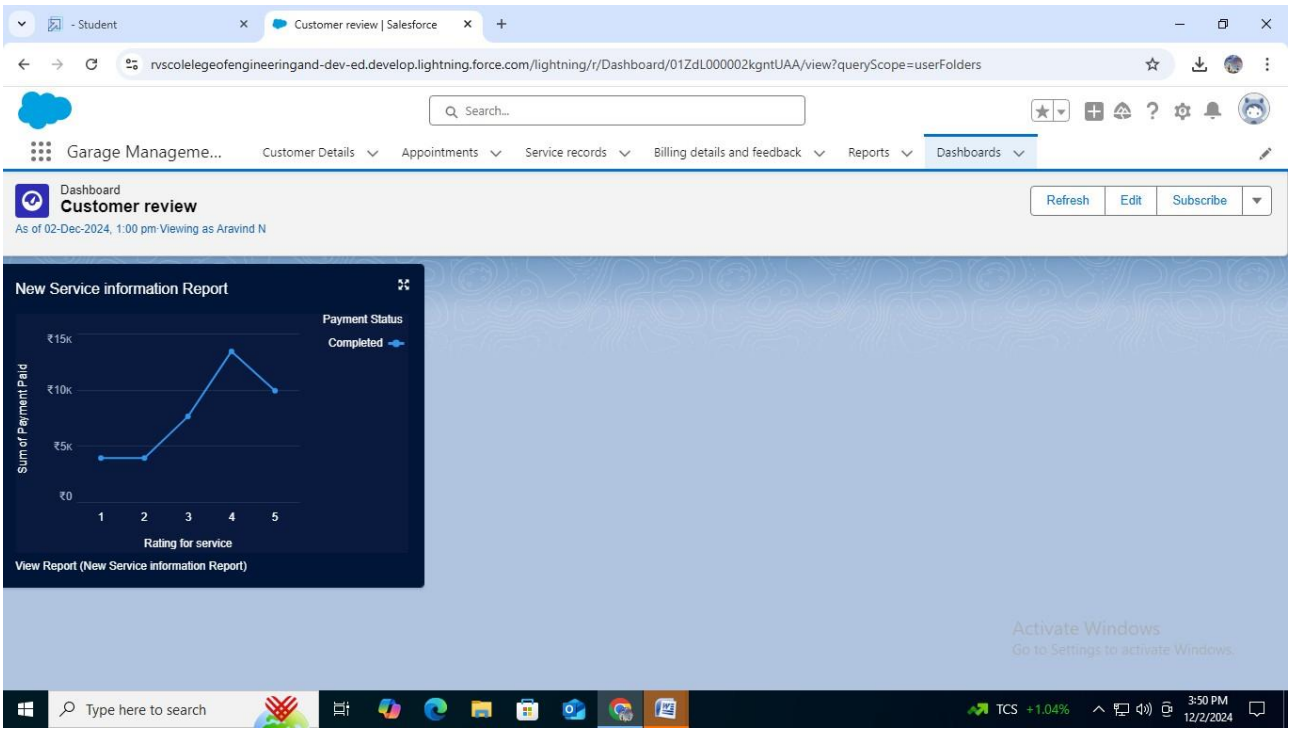


Report in Line Chart



Dashboard:

Dashboards help you visually understand changing business conditions so you can make decisions based on the real-time data you've gathered with reports. Use dashboards to help users identify trends, sort out quantities, and measure the impact of their activities. Before building, reading, and sharing dashboards, review these dashboard basics. After creating the reports we can start generating the dashboard ,it is mainly use the display the details in the graph manner (Line graph).



Dash Board

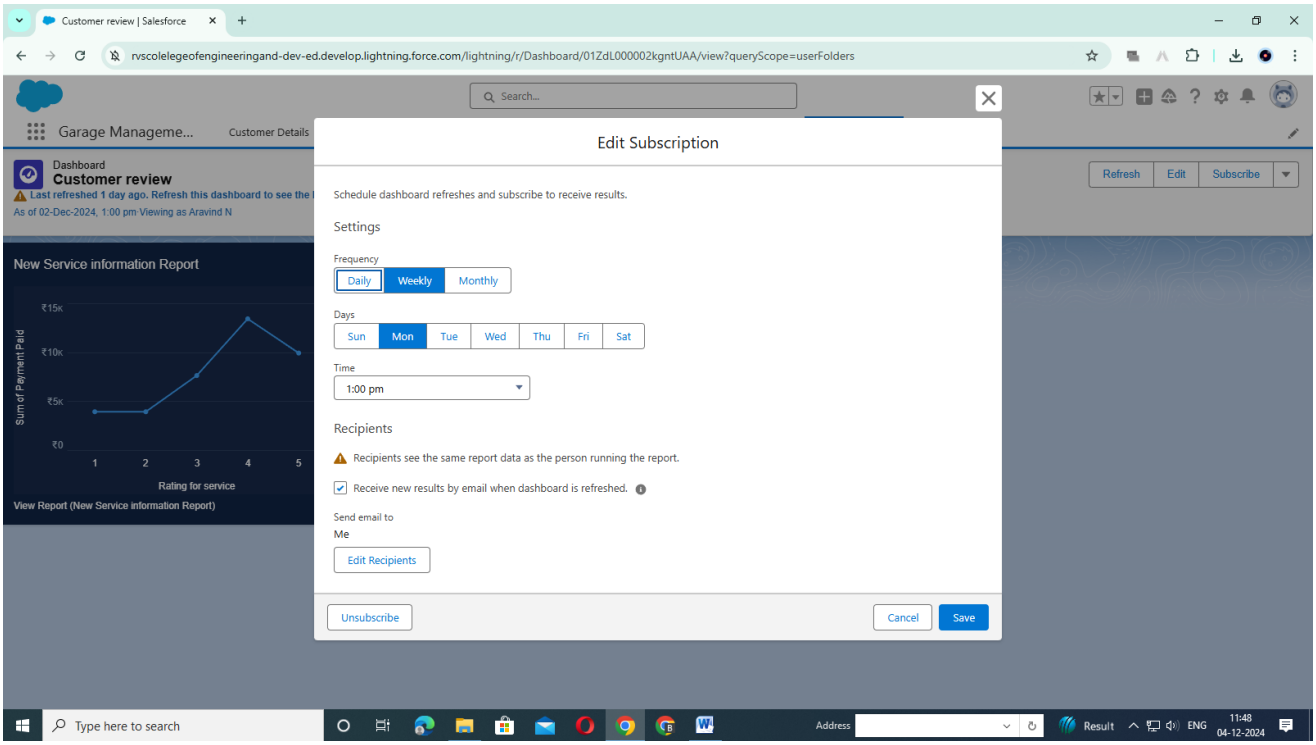
Subscription:

The **Garage Management System (GMS)** is designed to streamline and enhance the management of vehicle repairs, maintenance schedules, and customer interactions. By introducing a **subscription model** to the system, garages and service centers can ensure that their reports, records, and customer feedback are automatically refreshed and updated each week. Every Monday, the system will automatically refresh data and accept new reports from

mechanics, customers, or service teams, making the workflow more efficient and reducing manual overhead.

Automatic Weekly Refresh:

- Every Monday, the system automatically refreshes the data, ensuring the latest records, maintenance logs, and customer feedback are updated.
- This helps ensure that technicians and service managers work with the most current and relevant information at the start of the week.



5. Key Scenarios Addressed by Salesforce

When implementing a **Garage Management System** using Salesforce, several key scenarios can be addressed through Salesforce's features and tools. Here are five important scenarios that Salesforce can help manage:

1. **Customer Vehicle Management**:
    - Salesforce can track and manage detailed information about customers' vehicles, such as make, model, year, VIN, service history, and repair status. This allows easy retrieval of vehicle data when customers come for services or repairs, ensuring a smooth customer experience.
2. **Service Appointment Scheduling**:
    - Salesforce can integrate with a scheduling system or leverage custom Lightning components to allow customers to book service appointments online. It can also automatically assign technicians based on availability, expertise, and workload, ensuring optimal utilization of resources.
3. **Parts Inventory Management**:
    - A key part of the Garage Management System is managing inventory for vehicle parts. Salesforce's **Sales Cloud** or **Service Cloud** can track parts inventory levels, generate automatic reorder alerts when stock is low, and facilitate the management of suppliers and purchase orders.
4. **Billing and Invoicing**:
    - Salesforce can handle billing processes, generating invoices for services rendered or parts purchased. Integration with **Salesforce Billing** or custom processes can automate the creation and sending of invoices, track payments, and follow up on overdue accounts, ensuring efficient financial operations.
5. **Customer Communication and Engagement**:
    - Salesforce can be used to maintain strong customer relationships by automatically sending service reminders, promotions, and maintenance tips via email, SMS, or push notifications. Salesforce's **Marketing Cloud** or **Service Cloud** can manage customer communication, track interactions, and follow up on service appointments.

These scenarios leverage Salesforce's capabilities to ensure the garage management process is streamlined, efficient, and customer-focused.

6. Conclusion

Implementing a **Garage Management System** using Salesforce offers a comprehensive solution that enhances operational efficiency and customer satisfaction. By leveraging Salesforce's robust features such as customer vehicle management, appointment scheduling, parts inventory tracking, billing automation, and customer engagement tools, the system streamlines day-to-day operations. This ensures better resource allocation, timely service delivery, and improved communication with customers, ultimately driving business growth and fostering long-term customer loyalty. Salesforce's scalability and customization also allow the system to evolve with the garage's needs, making it a future-proof investment.