SALESFORCE DEVELOPER PROJECT

By SmartInternz

Garage Management System-Salesforce CRM Solution for Automotive Service Centers

By

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Computer Science and Engineering (2021-2025)

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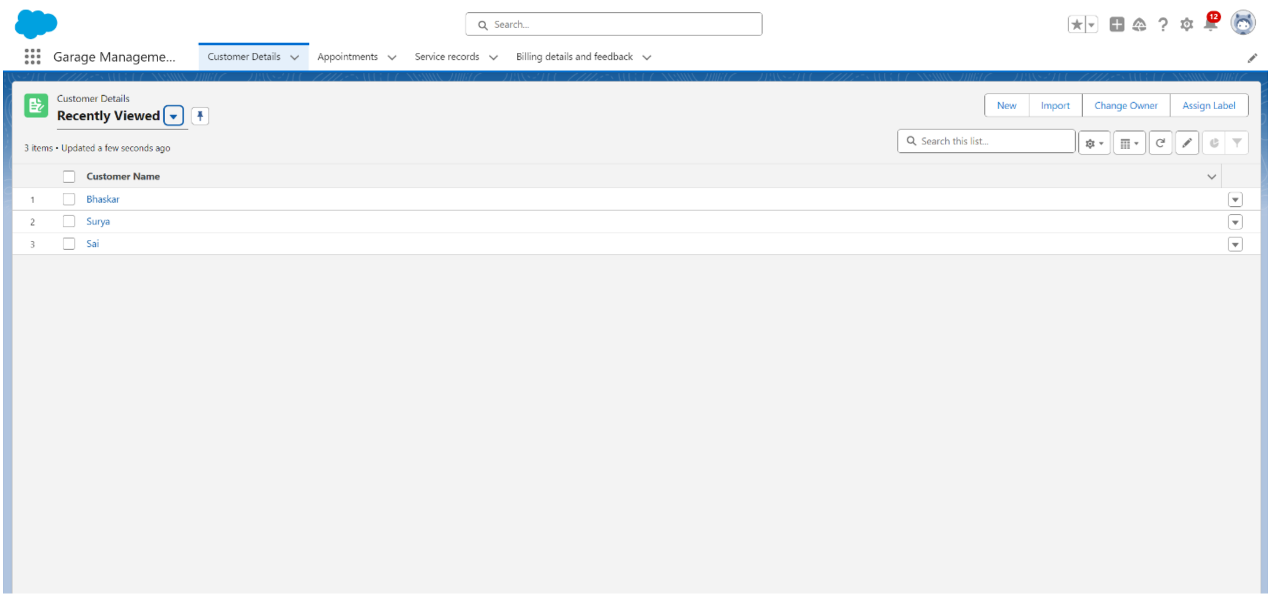
Garage Management System - Salesforce CRM Solution for Automotive Service Centers

Project Overview

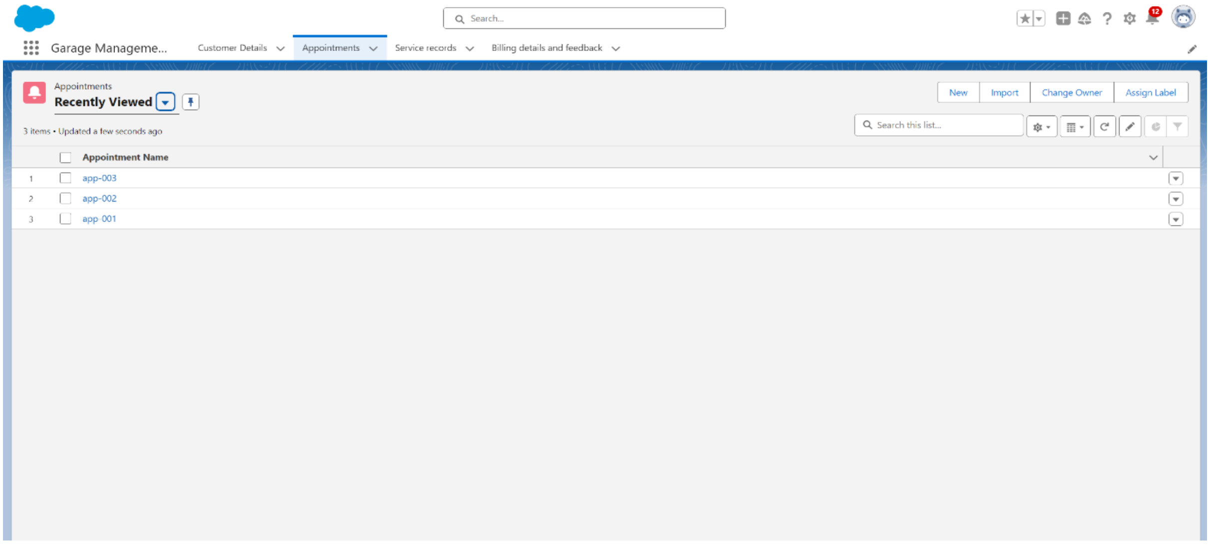
The **Garage Management System (GMS)** is a comprehensive CRM solution built on Salesforce, designed specifically for automotive service centers. This system streamlines customer management, appointment scheduling, service tracking, and billing, creating a centralized platform that efficiently handles the customer lifecycle—from initial booking to post-service feedback.

Key Features

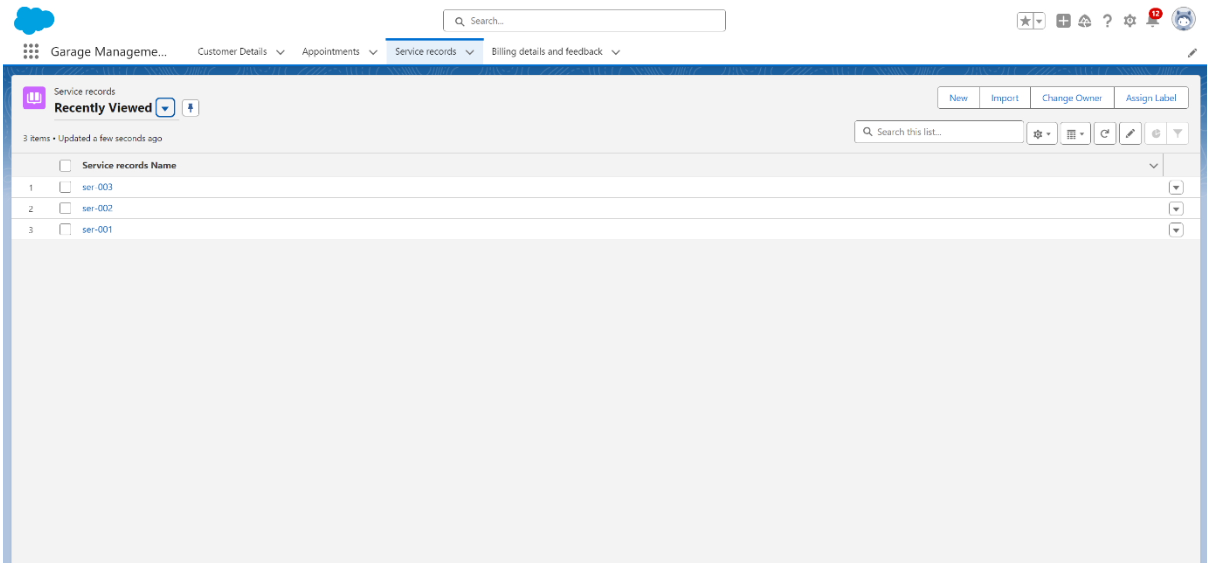
- **Customer details:**
  - Store and manage customer details including contact information, service history, and preferences.
  - Access comprehensive service records for customer insights and tailored service.



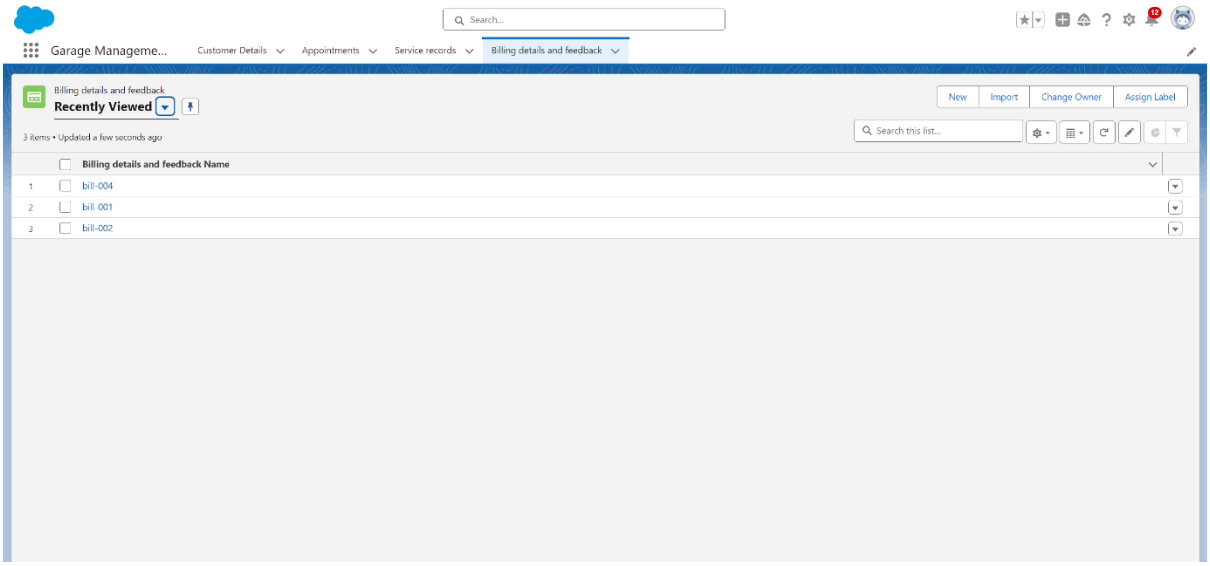
- **Appointment:**
  - Schedule and manage appointments with mechanics.
  - Automated reminders and notifications to reduce no-shows.
  - Integrated calendar to optimize working time.



- **Service Records:**
  - Track detailed service information including service type, parts used, and associated costs.
  - Link service records to specific customer appointments for easy tracking and reference.



- **Billing details:**
  - Generate and manage billing details, linking them to service records.
  - Track payment status and send timely payment reminders.
  - Automated invoice generation and email notifications for a streamlined payment process.



- **Feedback:**
    - Collect and manage customer feedback post-service.
    - Track ratings and comments to enhance service quality.
    - Analyze feedback trends for continuous improvement.

Technical Architecture

Custom Objects

- Customer details
- Appointment
- Service Records
- Billing details & Feedback

Object Relationships

- Appointment → Customer details (Lookup)
- Service Records → Appointment (Lookup)
- Billing details and feedback → Service Records (Lookup)

Automation

- **Flows:**
    - **Record-trigger Flow:** Manages customer verification, appointment, and reminder notifications.
    - **Amount Update Flow:** Automatically generates a billing record upon service completion and sends payment reminders.
    - **Email Alert Flow:** Sends a feedback request to customers post-service.

- **Approval Processes:** Approvals for high-value repairs or additional services, with manager-based routing and email notifications for approvals and rejections.
- **Apex Triggers:**
    - **AmountDistributionTrigger:** Validates business hours for appointment and Automatically calculates service costs and updates billing status upon payment.

User Interface

- **Lightning Components:**
    - Custom Lightning App: "Garage Management System"
    - Custom Home Page for easy navigation and quick access to customer and appointment details.
    - Streamlined navigation with essential tabs and dashboards for Sales person and managers.

Setup Instructions

1. **Object Creation:**
    - Create Customer details and Service Records objects and data.
    - Create Appointment, Billing details, and Feedback objects.
    - Create relationship fields to link objects as needed.
2. **User Configuration:**
    - Set up profiles for Sales person and Managers.
    - Configure user permissions and hierarchies for different user roles.
3. **Flow Deployment:**
    - Deploy the Record-trigger Flow.
    - Deploy the Amount update Flow.
    - Deploy the Email alert Flow.
4. **Lightning App Setup:**
    - Deploy the Garage Management System Lightning App.
    - Configure home page layouts to suit user roles.
    - Assign app permissions to profiles.

Process

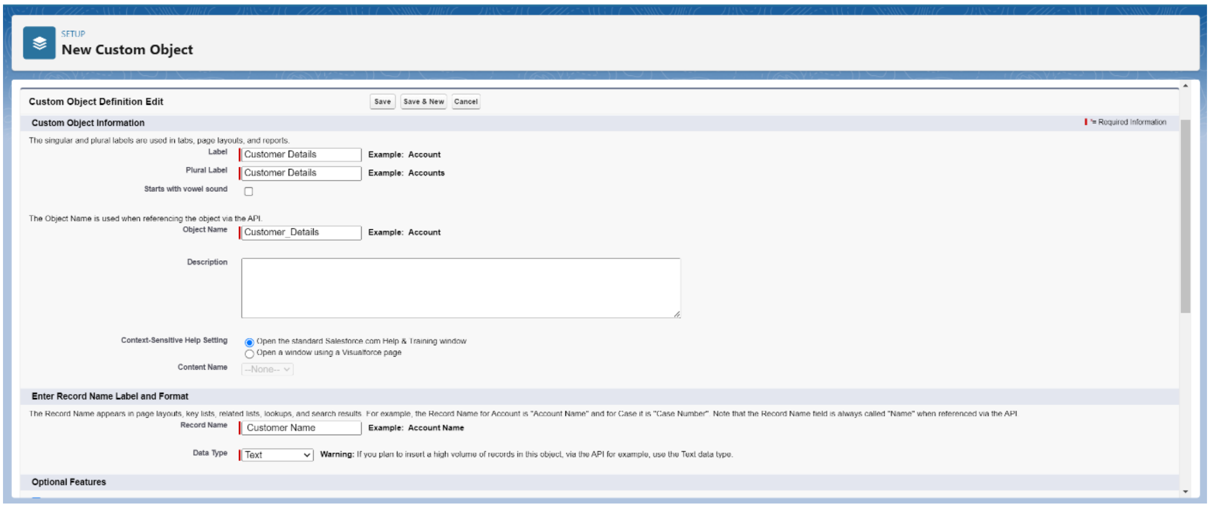
Activity 1: Creating a Salesforce Developer Account and Activation

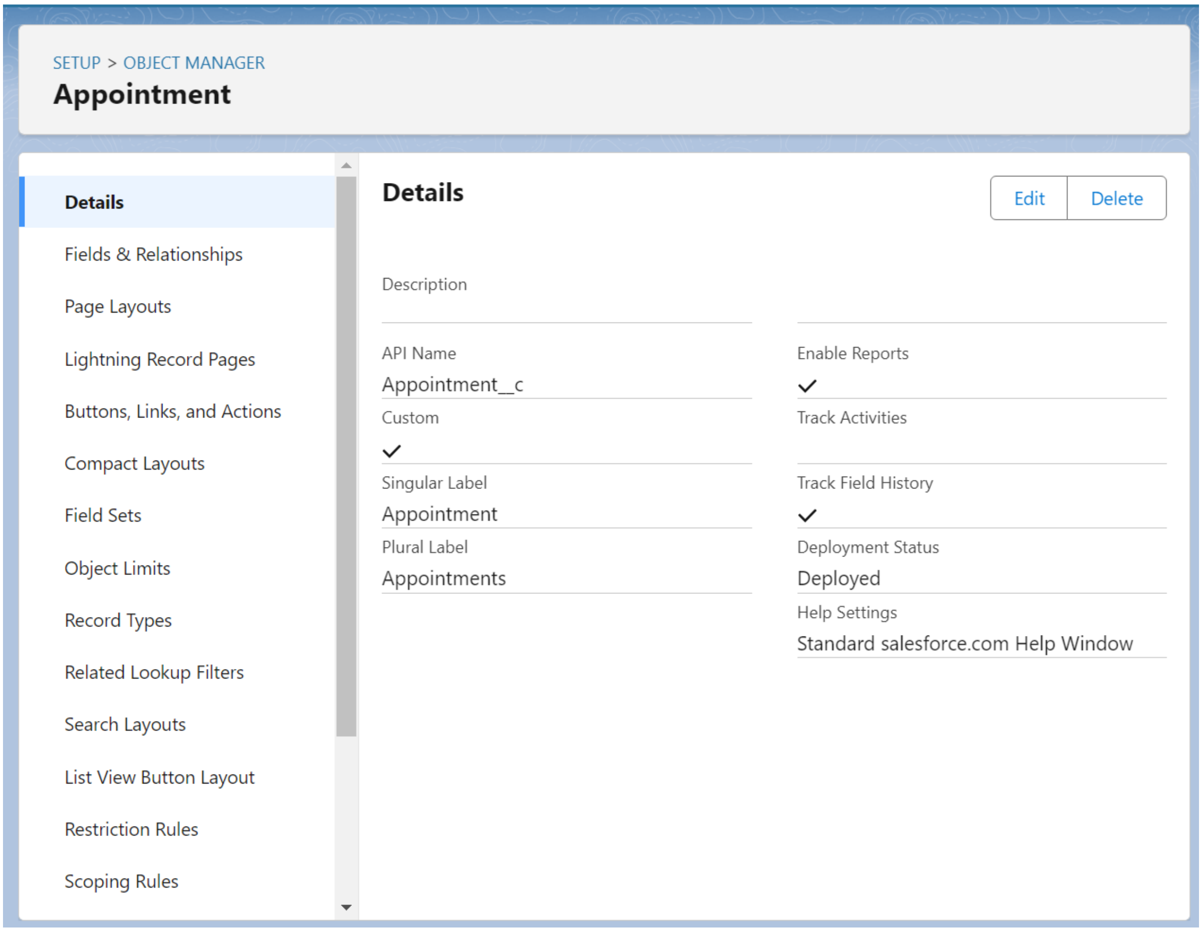
1. **Sign Up**: Visit [Salesforce Developer Sign Up].
2. **Fill Out the Form**: Enter the required details in the sign-up form and submit.
3. **Email Verification**: Check your email inbox (wait 5-10 minutes if needed) and click "Verify Account" to activate.
4. **Set Up Password**: Create a password and select a security question, then click "Change Password."
5. **Access Salesforce Setup**: You will be redirected to your Salesforce setup page.

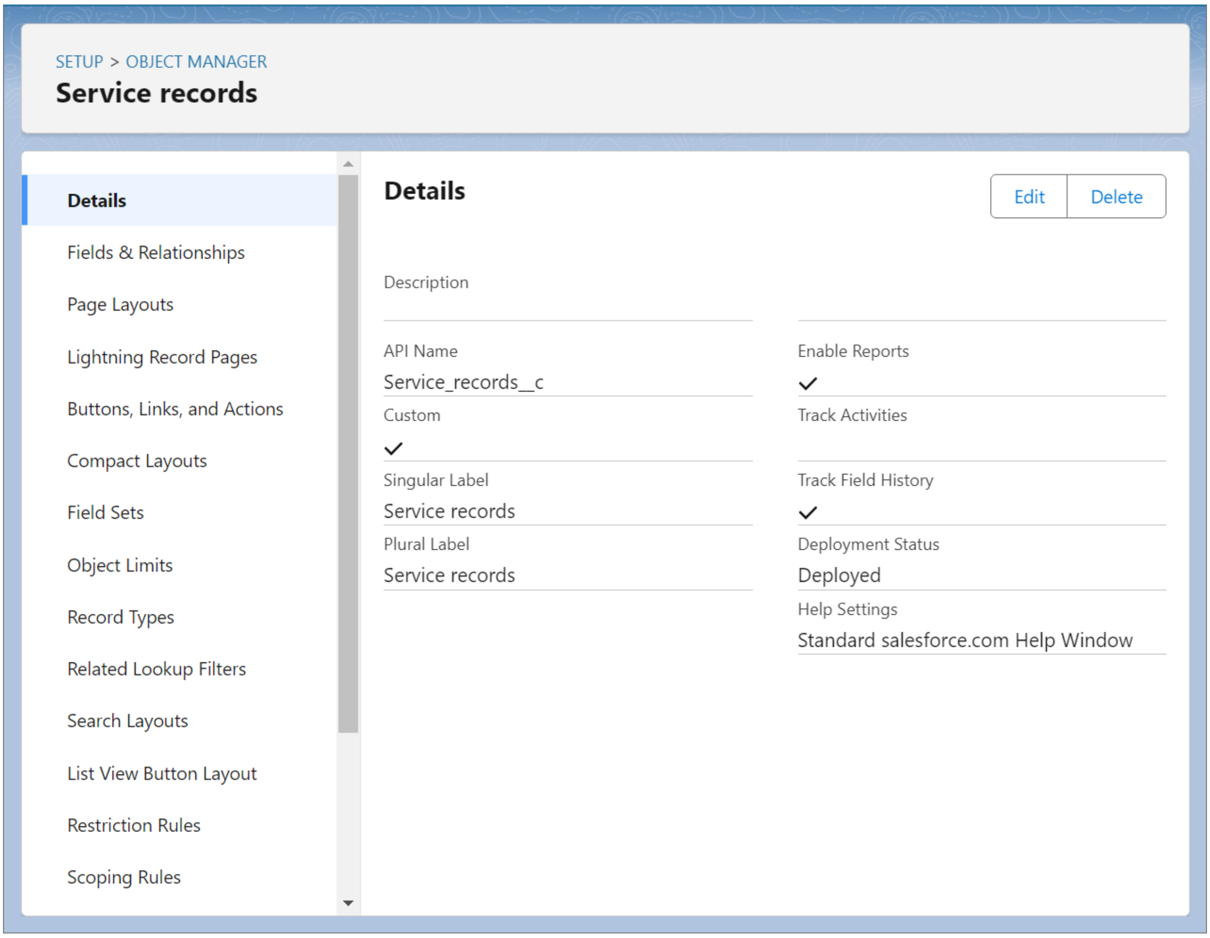
Activity 2: Creating Custom Objects

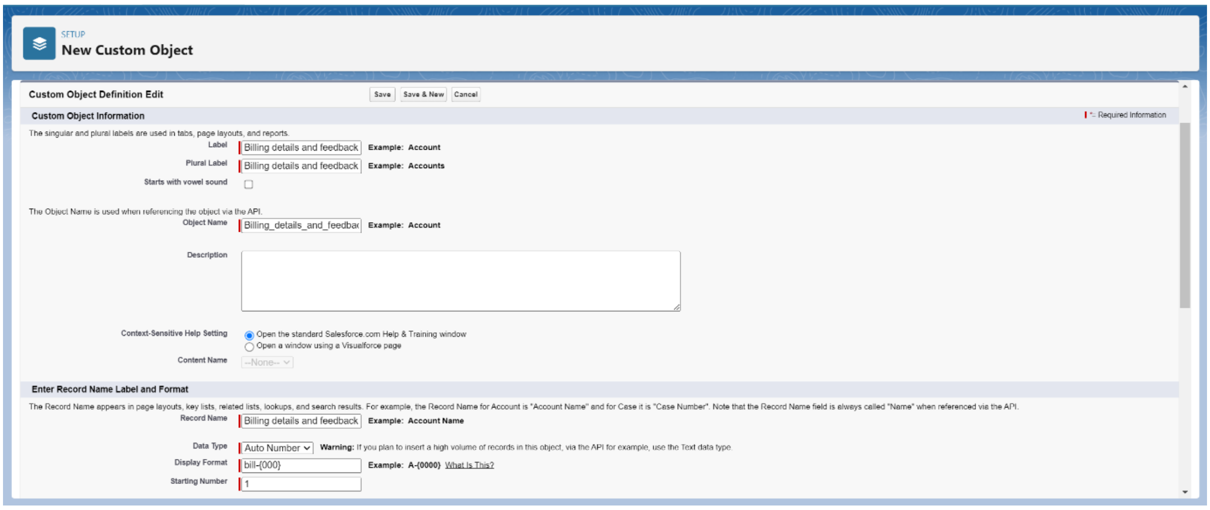
1. **Navigate to Custom Object Creation**:
2. From the Setup page, go to **Object Manager** > **Create** > **Custom Object**.
3. **Enter Object Details**:
4. **Label Name** and **Plural Label**:
   - "Customer Details" (singular and plural: Customer Details)
   - "Appointment" (singular: Appointment, plural: Appointments)
   - "Service Records" (singular and plural: Service Records)
   - "Billing Details and Feedback" (singular and plural: Billing Details and Feedback)
5. **Set Record Name and Format**:
6. Enter the **Record Name** (e.g., "Customer Name," "Appointment Name," "Service Records Name," "Billing Details and Feedback Name").
7. Choose **Data Type**:
   - Text for Customer Details
   - Auto Number for others
   - Specify **Display Format** (e.g., "app-{000}", "ser-{000}", "bill-{000}")
   - **Starting Number**: 1
8. **Configure Settings**:
9. Enable **Allow Reports**, **Track Field History**, and **Allow Search**.

10.Click **Save**.





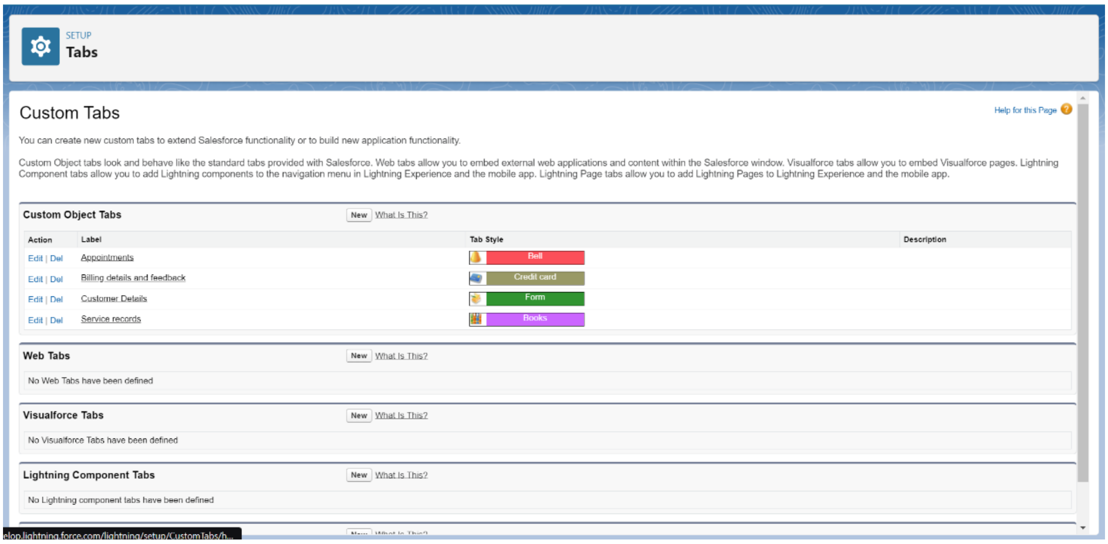




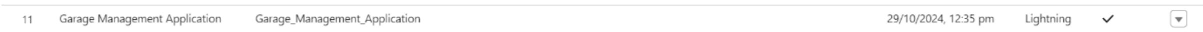
Activity 3: Creating Custom Tabs and Configuring Lightning App

1. **Create Tabs for Custom Objects**:
    - Go to the **Setup** page > search **Tabs** in the Quick Find bar > click **Tabs**.
    - Select **New** under Custom Object Tabs.
    - Choose **Object** (e.g., Customer Details), select **Tab Style**, and proceed.
    - In the profiles page, keep settings as default and click **Next**.
    - In the Custom App selection, uncheck **Include Tab** and ensure **Append tab to users' existing personal customizations** is checked.

- Repeat these steps for **Appointments, Service Records,** and **Billing Details and Feedback** objects.



2. **Create a Lightning App Page**:
   - Go to the **Setup** page > search **App Manager** in Quick Find > select **App Manager**.
   - Click on **New Lightning App** and follow the prompts to create the app.
   - Click **Save** when done.



Activity 4: Setting Up Fields and Relationships

When we talk about Salesforce, Fields represent the data stored in the columns of a relational database. It can also hold any valuable information that you require for a specific object. Hence, the overall searching, deletion, and editing of the records become simpler and quicker.

Types of Fields

1. Standard Fields

2. Custom Fields

Standard Fields:

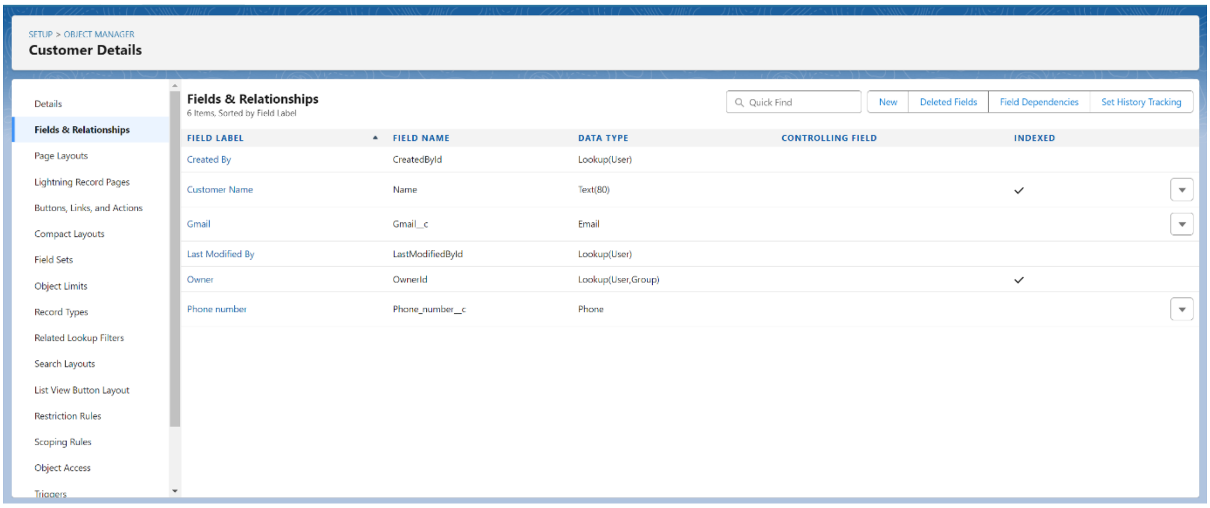
As the name suggests, the Standard Fields are the predefined fields in Salesforce that perform a standard task. The main point is that you can’t simply delete a Standard Field until it is a non-required standard field. Otherwise, users have the option to delete them at any point from the application freely. Moreover, we have some fields that you will find common in every Salesforce application. They are,

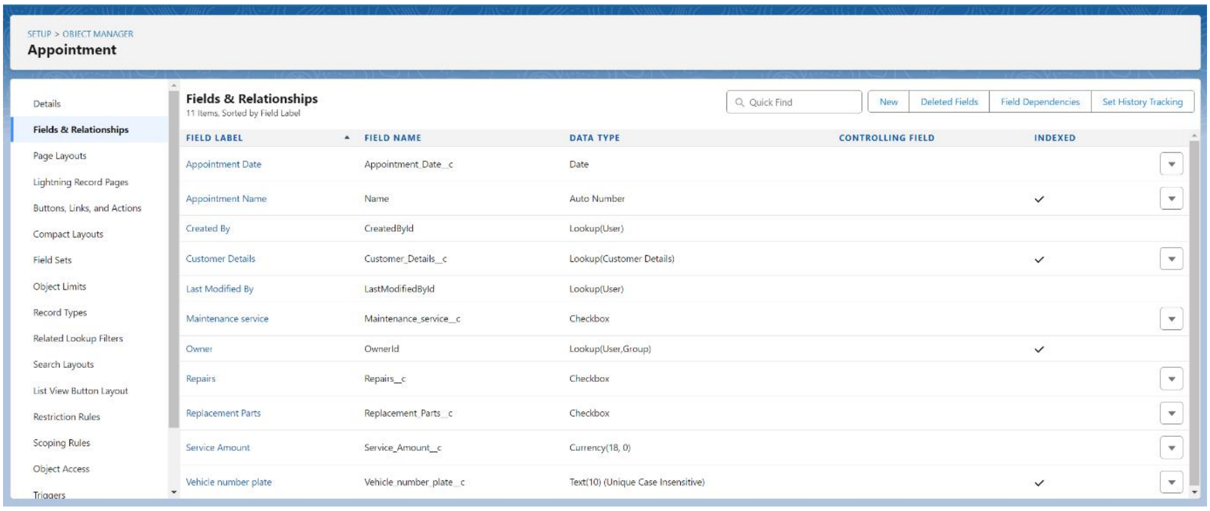
- Created By
- Owner
- Last Modified
- Field Made During object Creation

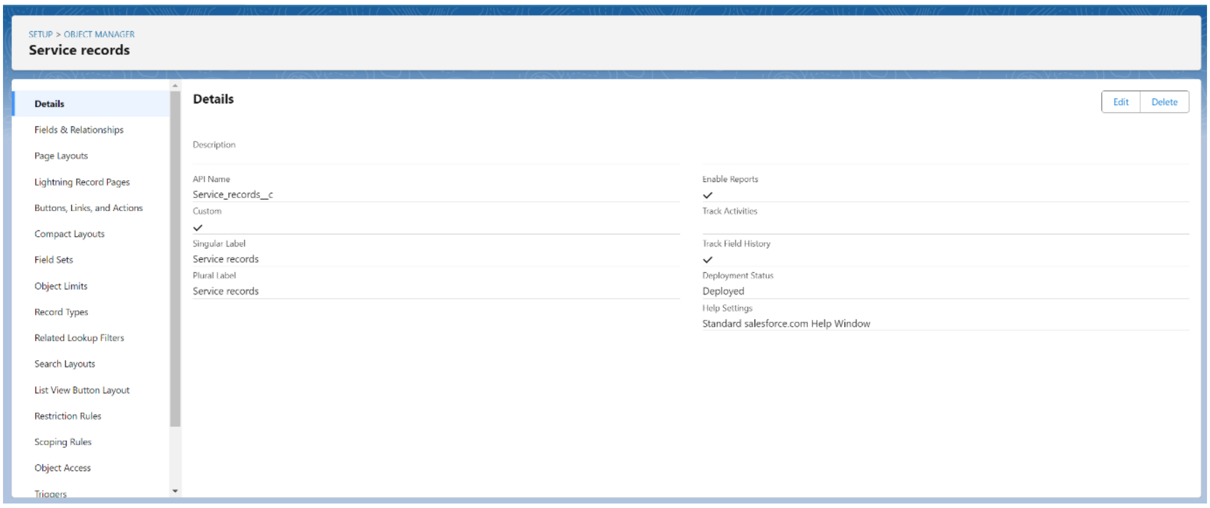
Custom Fields:

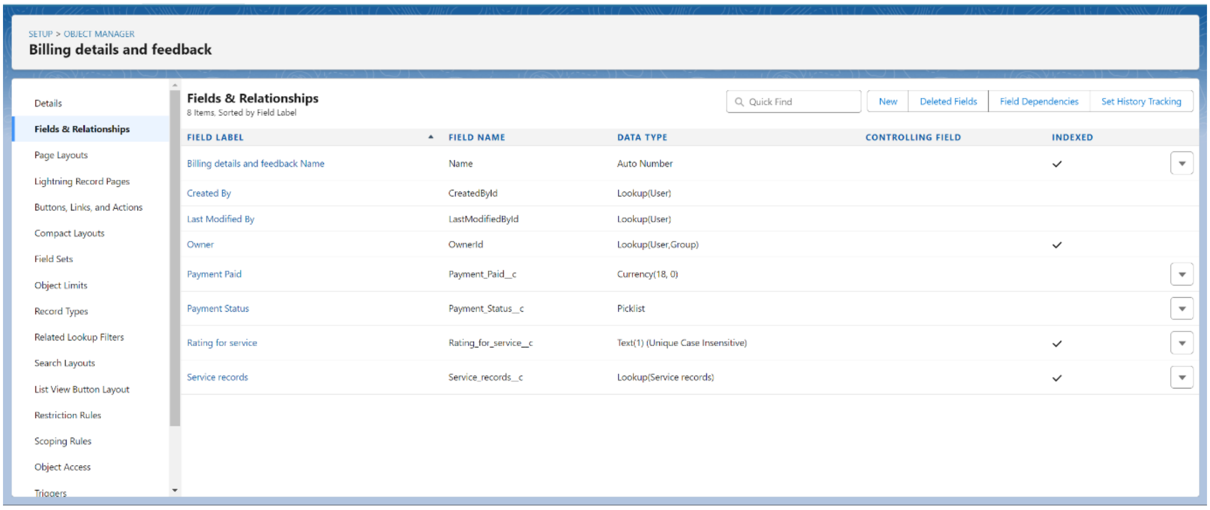
On the other side of the coin, Custom Fields are highly flexible, and users can change them according to requirements. Moreover, each organiser or company can use them if necessary. It means you need not always include them in the records, unlike Standard fields. Hence, the final decision depends on the user, and he can add/remove Custom Fields of any given form.

We setup various fields in custom Salesforce objects (e.g., Customer Details, Appointments, Service Records, Billing Details, and Feedback) to capture and organize specific data types, such as phone numbers, dates, and statuses. This setup includes creating relationships, defining data entry requirements, and configuring display formats to streamline data tracking and reporting.



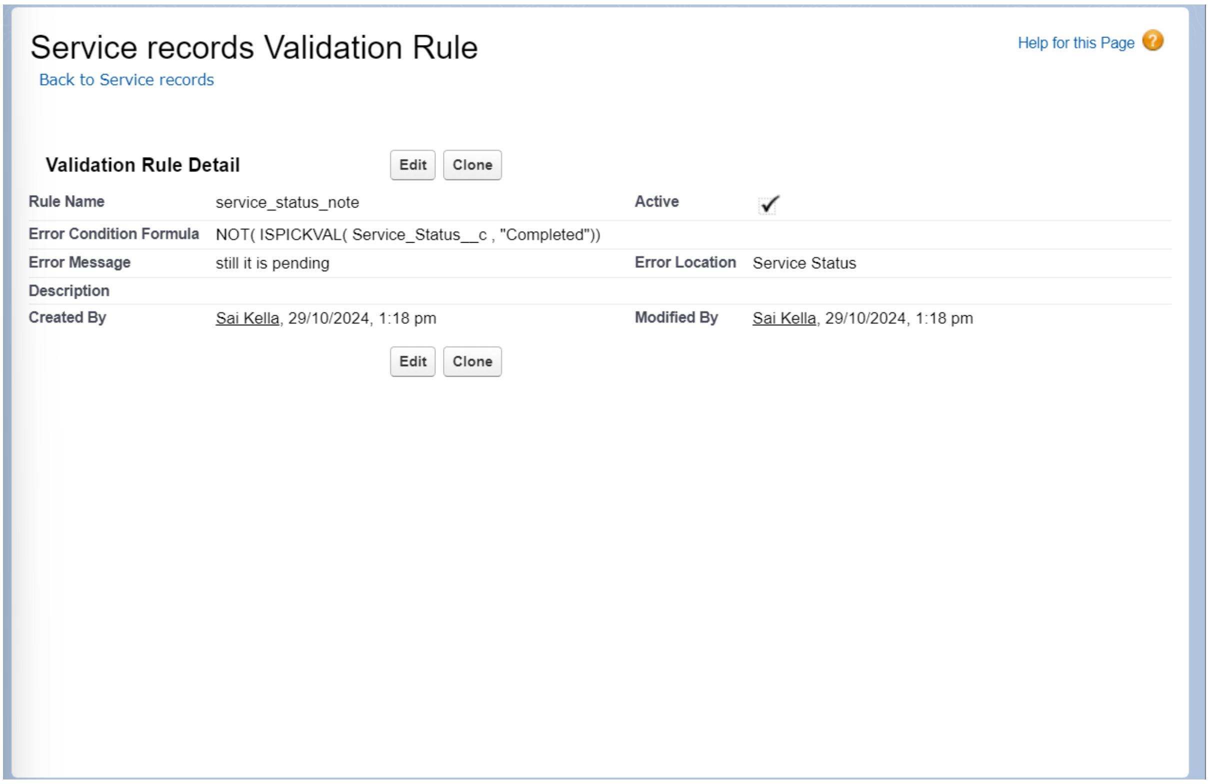


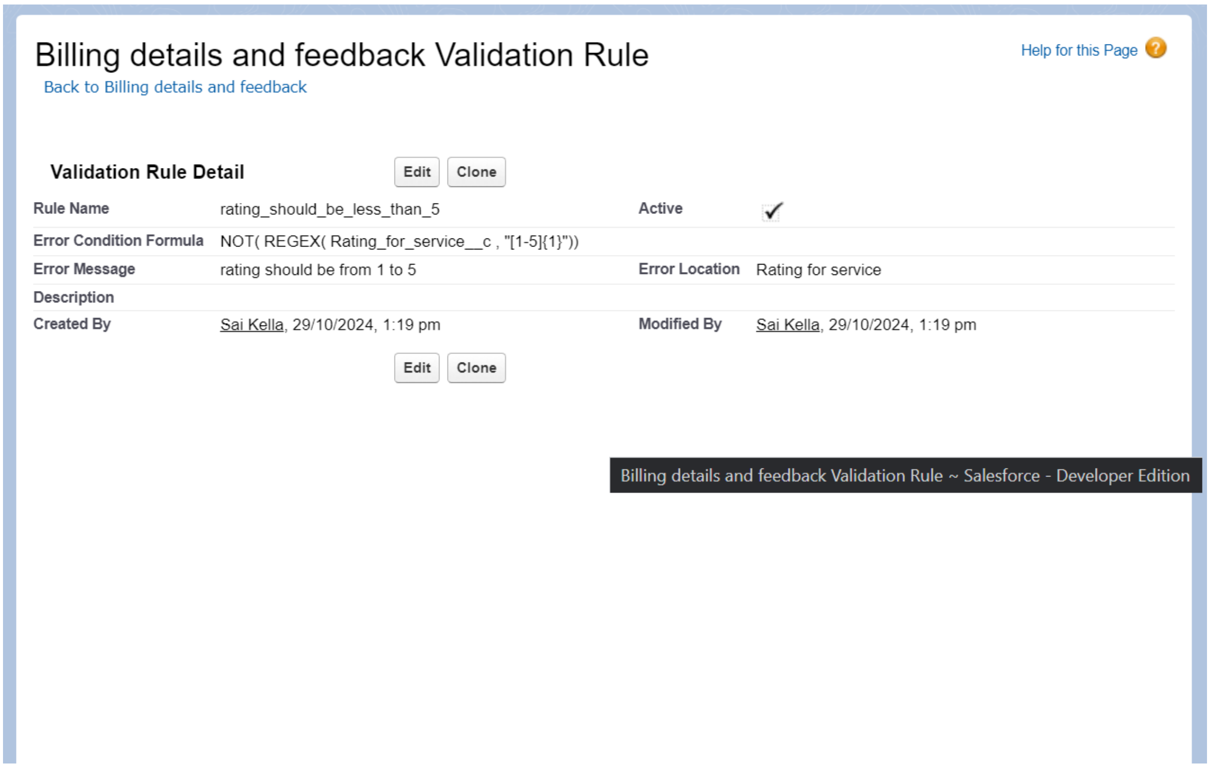




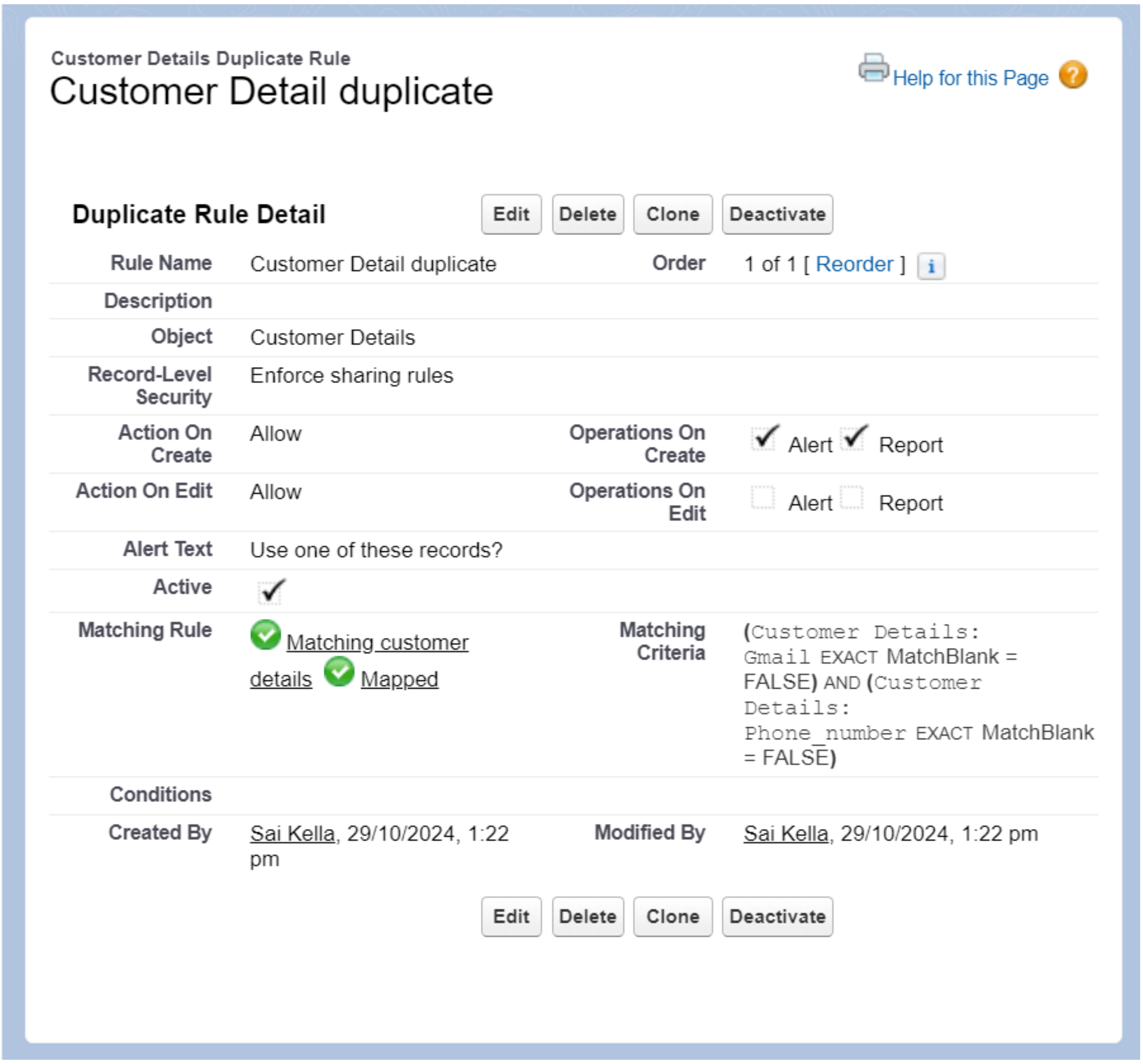
Activity 5: Creating Validation and Duplicate Rules

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.





3. **Create a Matching Rule**:
   - In **Setup**, search for **Matching Rule** > click **New Rule** > configure for the Customer Details object.
4. **Create a Duplicate Rule**:
   - In **Setup**, search for **Duplicate Rules** > click **New Rule** > select Customer Details object.
   - Name the rule "Customer Detail duplicate," select the **Matching Rule** ("Matching customer details") > Save and Activate.



Activity 6: Configuring Profiles and Roles

A profile is a group/collection of settings and permissions that define what a user can do in salesforce. Profile controls “Object permissions, Field permissions, User permissions, Tab settings, App settings, Apex class access, Visualforce page access, Page layouts, Record Types, Login hours & Login IP ranges. You can define profiles by the user's job function. For example System Administrator, Developer, Sales Representative.

Types of profiles in salesforce

1. **Standard profiles:**

   By default salesforce provides below standard profiles.

- Contract Manager
- Read Only
- Marketing User

Solutions Manager

- Standard User
- System Administrator.

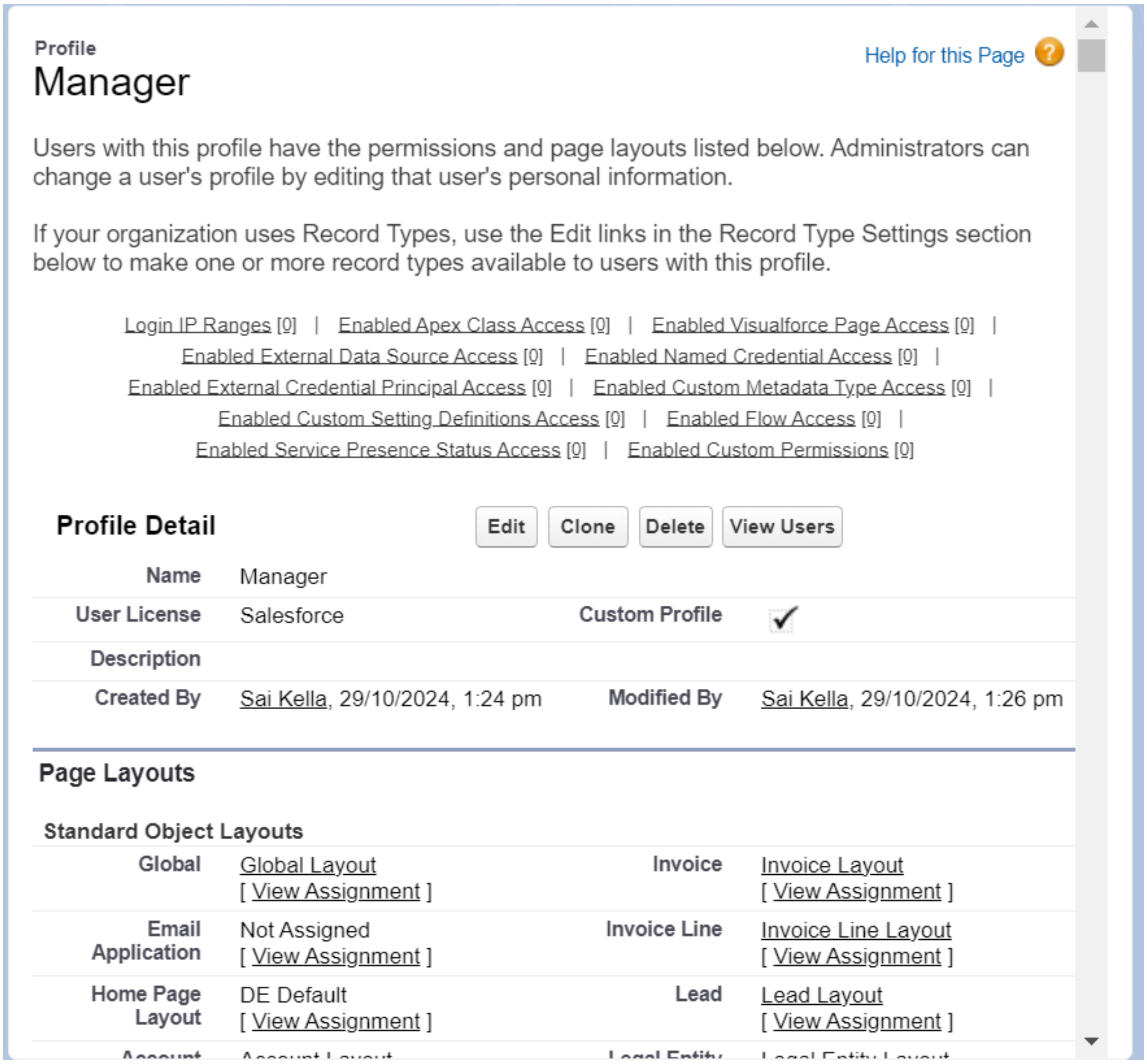
We cannot deleted standard ones

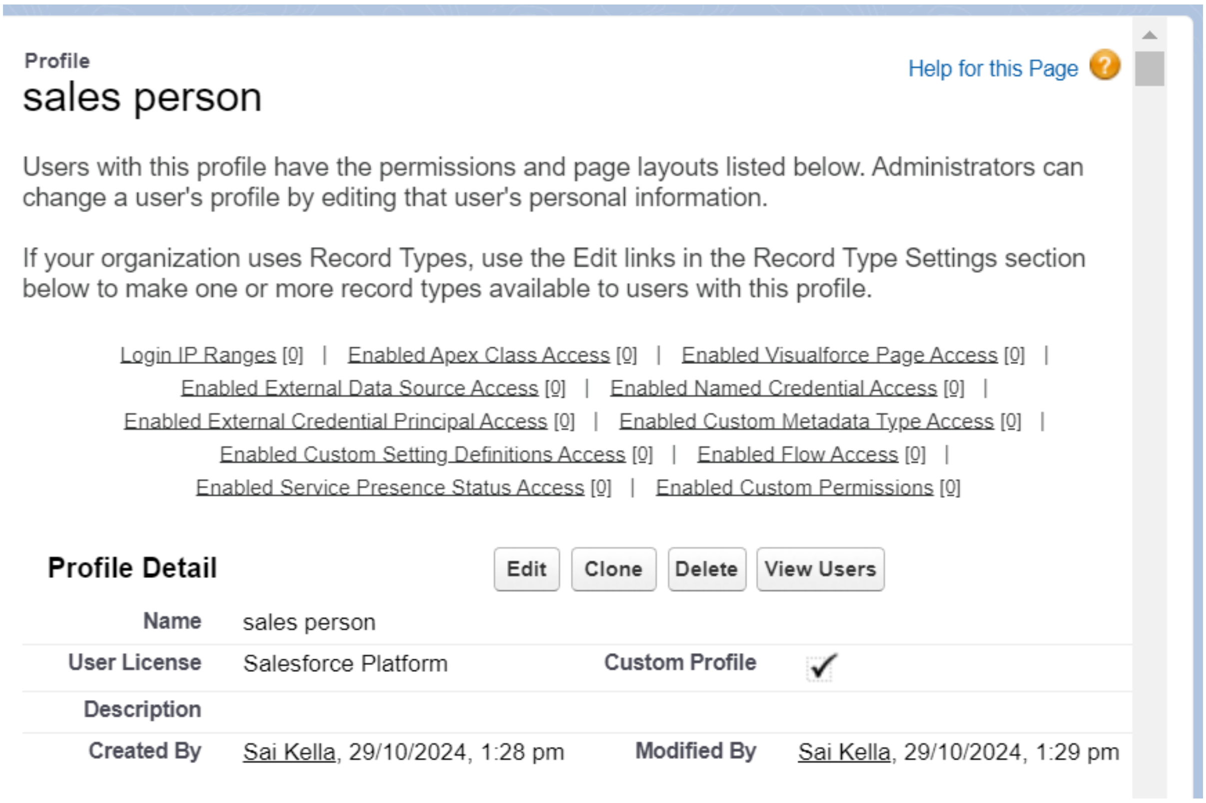
Each of these standard ones includes a default set of permissions for all of the standard objects available on the platform.

2. **Custom Profiles:**

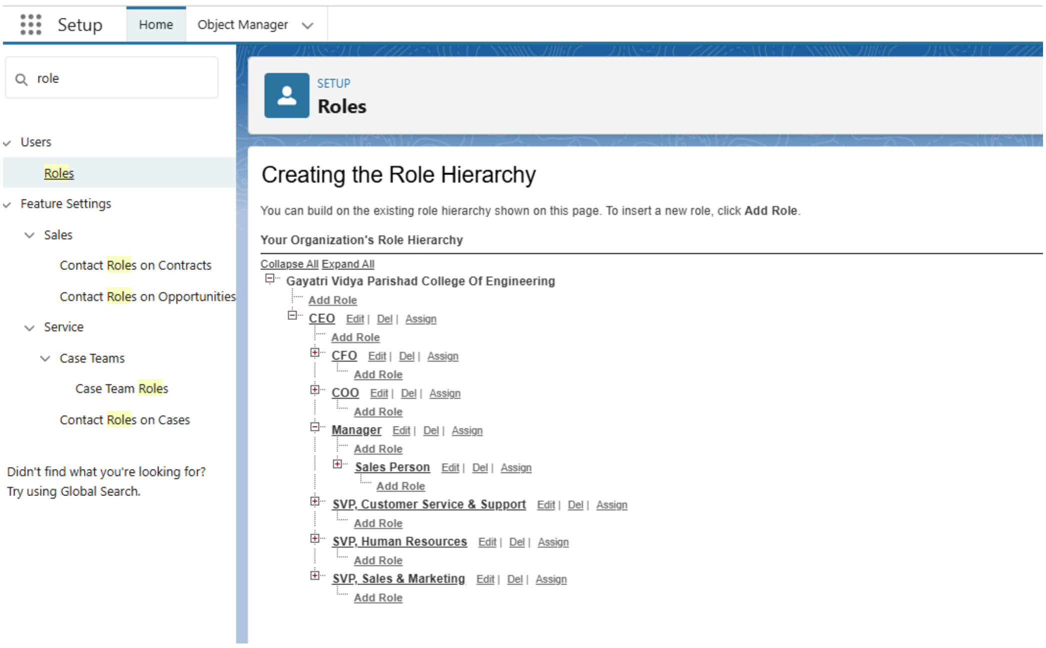
Custom ones defined by us.

They can be deleted if there are no users assigned with that particular one.





A role in Salesforce defines a user's visibility access at the record level. Roles may be used to specify the types of access that people in your Salesforce organization can have to data. Simply put, it describes what a user could see within the Salesforce organization.



Activity 7: Creating Users, Public Groups and Sharing Settings

A role in Salesforce defines a user's visibility access at the record level. Roles may be used to specify the types of access that people in your Salesforce organization can have to data. Simply put, it describes what a user could see within the Salesforce organization.

Public groups are a valuable tool for Salesforce administrators and developers to streamline user management, data access, and security settings. By creating and using public groups effectively, you can maintain a secure and organized Salesforce environment while ensuring that users have appropriate access to the resources they need.

Sharing Setting

Salesforce allows you to configure sharing settings to control how records are accessed and shared within your organization. These settings are crucial for maintaining data security and privacy. Salesforce provides a variety of tools and mechanisms to define and enforce sharing rules, such as:

Organization-Wide Default (OWD) Settings:

These settings define the default level of access for all objects within your Salesforce org.

OWD settings include Private, Public Read-Only, Public Read/Write, and Controlled by Parent.

OWD settings can be configured for each standard and custom object.

Role Hierarchy:

Salesforce uses a role hierarchy to determine record access.

Users at higher levels in the hierarchy have greater access to records owned by or shared with users lower in the hierarchy.

The role hierarchy is often used in combination with OWD settings to grant different levels of access.

Profiles and Permission Sets:

Profiles and permission sets allow administrators to specify object-level and field-level permissions for users.

Profiles are typically used to grant general object and field access, while permission sets can be used to extend those permissions to specific users.

Sharing Rules:

Sharing rules are used to extend access to records for users who meet specific criteria.

They can be used to grant read-only or read-write access to records owned by other users.

Manual Sharing:

Administrators and record owners can manually share specific records with other users or groups.

User

Niklaus Mikaelson

User ProfileHelp for this Page

Permission Set Assignments [0] | Permission Set Assignments: Activation Required [0] | Permission Set Group Assignments [0] | Permission Set License Assignments [0] | Personal Groups [0] | Public Group Membership [0] | Queue Membership [0] | Team [0] | Managers in the Role Hierarchy [0] | OAuth Apps [0] | Third-Party Account Links [0] | Installed Mobile Apps [0] | Authentication Settings for External Systems [0] | Login History [0+] | User Provisioning Accounts [0]

User Detail

Edit | Sharing | Reset Password | Freeze | View Summary

Name	Niklaus Mikaelson	**Role**	Manager
Alias	nmika	**User License**	Salesforce
Email	linkchinmai@gmail.com [Verify]	**Profile**	Manager
Username	linkchinmai@gmail.com	**Active**	✓
Nickname	User17301889022503304337	**Marketing User**	
Title		**Offline User**	
Company		**Knowledge User**	
Department		**Flow User**	
Division		**Service Cloud User**	
Address		**Site.com Contributor User**	
Time Zone	(GMT+05:30) India Standard Time (Asia/Kolkata)	**Site.com Publisher User**	
Locale	English (India)	**WDC User**	

Public Groups

Help for this Page

A public group is a set of users. It can contain individual users, other groups, the users in a particular role or territory, or the users in a role or territory plus all of the users below that role or territory in the hierarchy.

View: All | Edit | Create New View

A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | Other | **All**

New

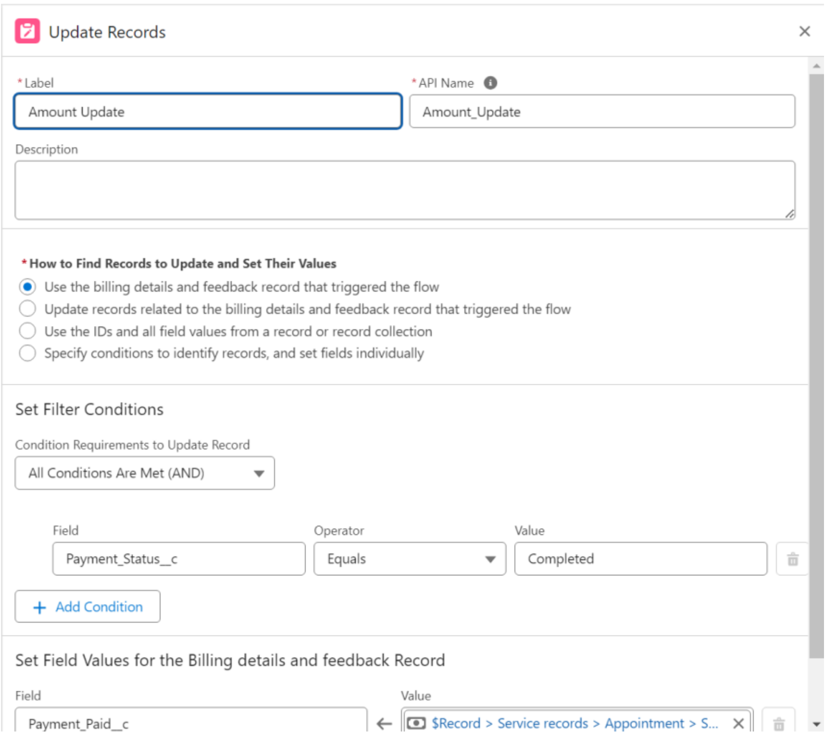
Action	Label ↑	Group Name	Created By	Created Date
Edit | Del	sales team	sales_team	Kella, Sai	29/10/2024, 1:39 pm

Activity 8: Creating a Flow

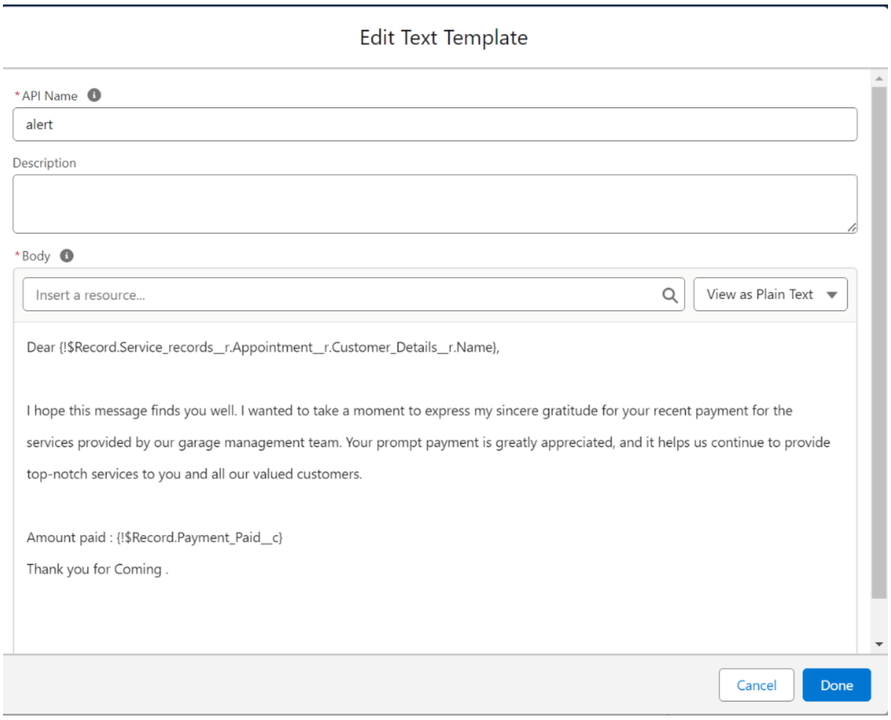
In Salesforce, a flow is a powerful tool that allows you to automate business processes, collect and update data, and guide users through a series of screens or steps. Flows are built using a visual interface and can be created without any coding knowledge.

1. **Create a New Flow**:
   - In **Setup**, search for **Flow** > select **New Flow** > choose **Record-triggered flow** and click **Create**.
   - Select **Billing Details and Feedback** as the object, trigger on **Created or Updated**, and optimize for **Actions and Related Records** > click **Done**.
2. **Add Elements to the Flow**:
   - **Update Records Element**:
     - Label: "Amount Update"
     - Set conditions where **Payment_Status__c** equals **Completed**.
     - Set **Payment_Paid__c** to reference {!$Record.Service_records__r.Appointment__r.Service_Amount__c}.

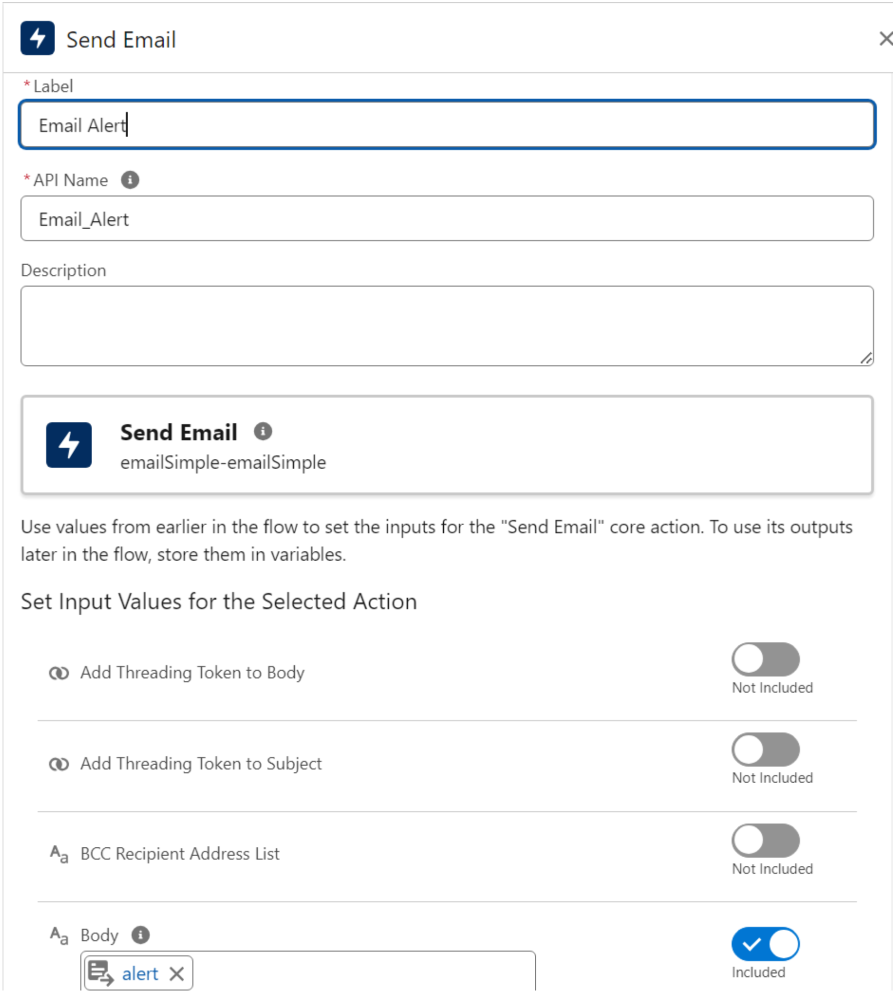
     Click **Done**.



- **Create a New Resource**:
  - Go to **Toolbox > New Resource** > select **Variable** > type: **Text Template**.
  - API Name: "alert"; paste a message template to thank the customer for payment.



- **Add an Action Element**:
  - Select **Send Email** > Label: "Email Alert" > enable body > use **alert** text template as Body.
  - Set **RecipientAddressList** to {!$Record.Service_records__r.Appointment__r.Customer_Name__r.Gmail__c }.
  - Add **Subject**: "Thank You for Your Payment - Garage Management".



3. **Save and Activate**:
    - Give the Flow a label, save it, and click **Activate**

Activity 9: Creating Apex triggers

Apex can be invoked by using triggers. Apex triggers enable you to perform custom actions before or after changes to Salesforce records, such as insertions, updates, or deletions.

A trigger is Apex code that executes before or after the following types of operations:

- Insert
- update
- delete
- merge
- upsert
- undelete

For example, you can have a trigger run before an object's records are inserted into the database, after records have been deleted, or even after a record is restored from the Recycle Bin.

You can define triggers for top-level standard objects that support triggers, such as a Contact or an Account, some standard child objects, such as a CaseComment, and custom objects. To define a trigger, from the object management settings for the object whose triggers you want to access, go to Triggers.

There are primarily two types of Apex Triggers:

Before Trigger: This type of trigger in Salesforce is used either to update or validate the values of a record before they can be saved into the database. So, basically, the before trigger validates the record first and then saves it. Some criteria or code can be set to check data before it gets ready to be inserted into the database.

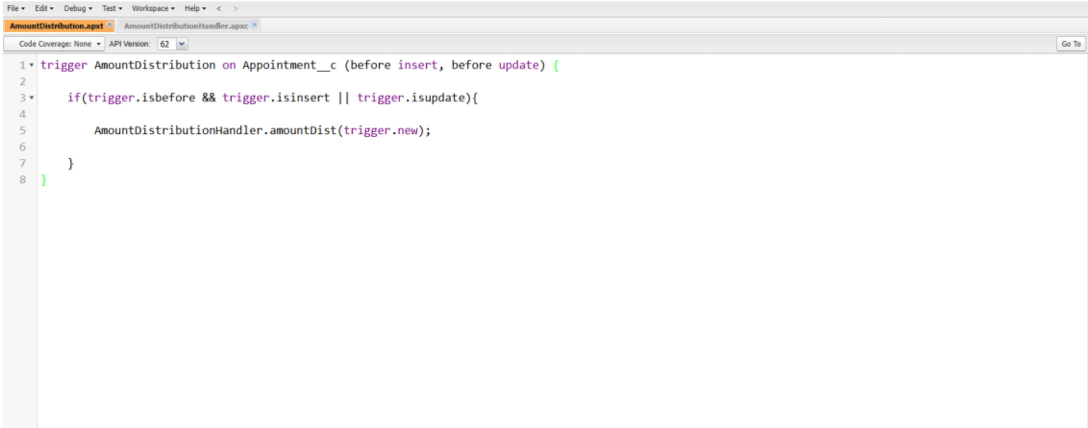
After Trigger: This type of trigger in Salesforce is used to access the field values set by the system and affect any change in the record. In other words, the after trigger makes changes to the value from the data inserted in some other record.

1. **Create Apex Class**:
    - In **Developer Console**, create a new Apex class named **AmountDistributionHandler**.
    - Code logic in AmountDistributionHandler assigns a **Service_Amount__c** value to each Appointment__c record based on selected services (e.g., Maintenance, Repairs, Replacement Parts).

File ▾ Edit ▾ Debug ▾ Test ▾ Workspace ▾ Help ▾ < >
AmountDistribution.apxt × AmountDistributionHandler.apxc ×
Code Coverage: None ▾ API Version: 62 Go To

```
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;

            }
        }
    }
}
```

2. **Create Apex Trigger**:
    - In **Developer Console**, create a trigger named **AmountDistribution** for the **Appointment__c** object.

- The trigger runs **before insert** and **before update** events, calling the AmountDistributionHandler.amountDist method when records exceed a defined threshold.
- 

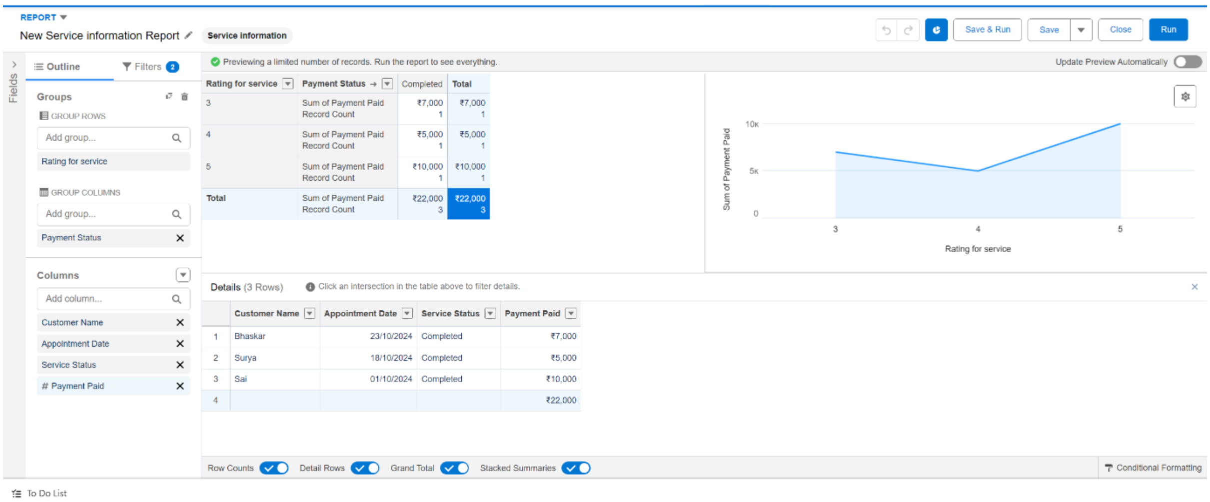
This handler and trigger automate amount distribution based on customer service selections.

Activity 10: Configuring Reports and Dashboard

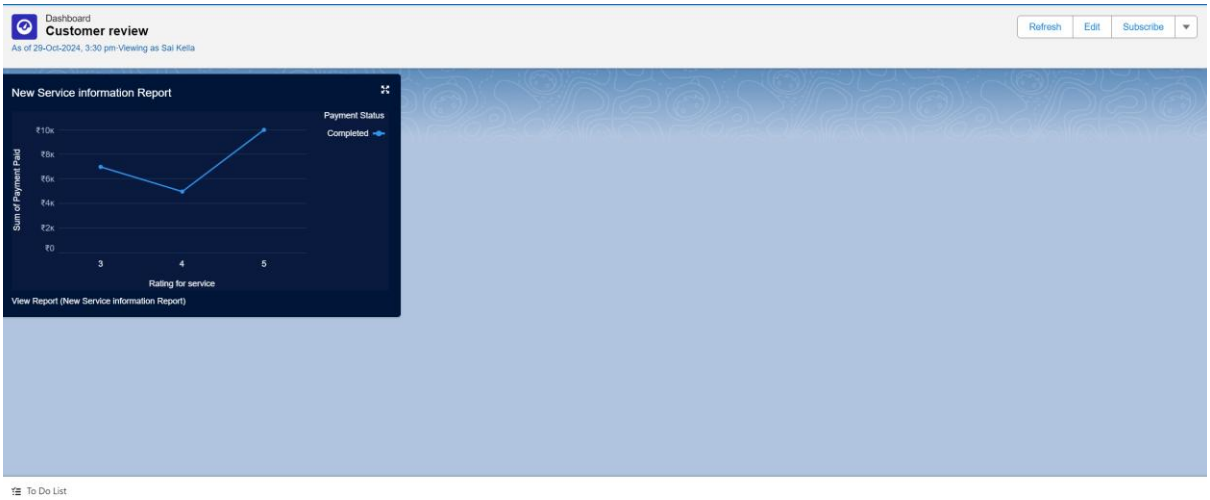
Reports give you access to your Salesforce data. You can examine your Salesforce data in almost infinite combinations, display it in easy-to-understand formats, and share the resulting insights with others. Before building, reading, and sharing reports, review these reporting basics.

Types of Reports in Salesforce

1. Tabular
2. Summary
3. Matrix
4. Joined Reports



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.



Features in Detail

Appointment

1. Customer requests an appointment, entering their preferred date and time.
2. also provides the type of service required and provide details like vehicle number plate and other customer details.
3. Appointment is confirmed, and a reminder email is sent to the customer.

Service details and Billing

1. Here all services provided, parts replaced and others will be recorded.
2. Billing record is generated based on service type and labor, with costs calculated automatically.
3. Payment reminders are sent if the billing status is pending.

Feedback Collection and Analysis

1. Feedback request is sent to the customer post-service.
2. Customer submits their feedback, which is recorded and linked to their profile.
3. Negative feedback triggers a follow-up case for management review.

System Requirements

- Salesforce Enterprise Edition or higher
- System Administrator profile for initial setup
- Service records and sales person licenses for end user

Author

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