StockBridge: Real-Time Inventory and Supplier Integration

User Story

The Smart Inventory Management System enhances inventory oversight and sales order tracking by integrating key functionalities. When an inventory item's stock level falls below a predefined threshold, the system automatically triggers reorder notifications to suppliers, ensuring timely restocking of products. As sales orders are created, updated, or canceled, the system adjusts stock quantities accordingly to maintain accurate inventory records. Additionally, customers receive email notifications regarding the status of their sales orders, keeping them informed about changes such as order completions or cancellations. This seamless integration of features not only enables efficient inventory management and reduces the risk of stockouts but also strengthens communication with suppliers and keeps customers updated, ultimately improving overall operational efficiency and satisfaction.

Objective:-

In the Smart Inventory Management project, I developed three essential objects: Inventory, Sales Order, and Supplier. Each object features crucial fields that capture vital information; the Inventory object includes product name, stock quantity, and reorder thresholds, ensuring effective monitoring of product availability. The Sales Order object is designed to record customer orders, detailing quantity ordered, associated products, and the current order status. The Supplier object manages communication with suppliers for timely stock replenishments. By establishing connections between these objects, I facilitate efficient interactions among inventory tracking, order processing, and supplier notifications. To enhance operational efficiency, I employed Salesforce Apex Triggers to automate reorder notifications to suppliers and used flows to send real-time order status updates to customers, ensuring seamless communication and streamlined inventory management processes.

Project Flow

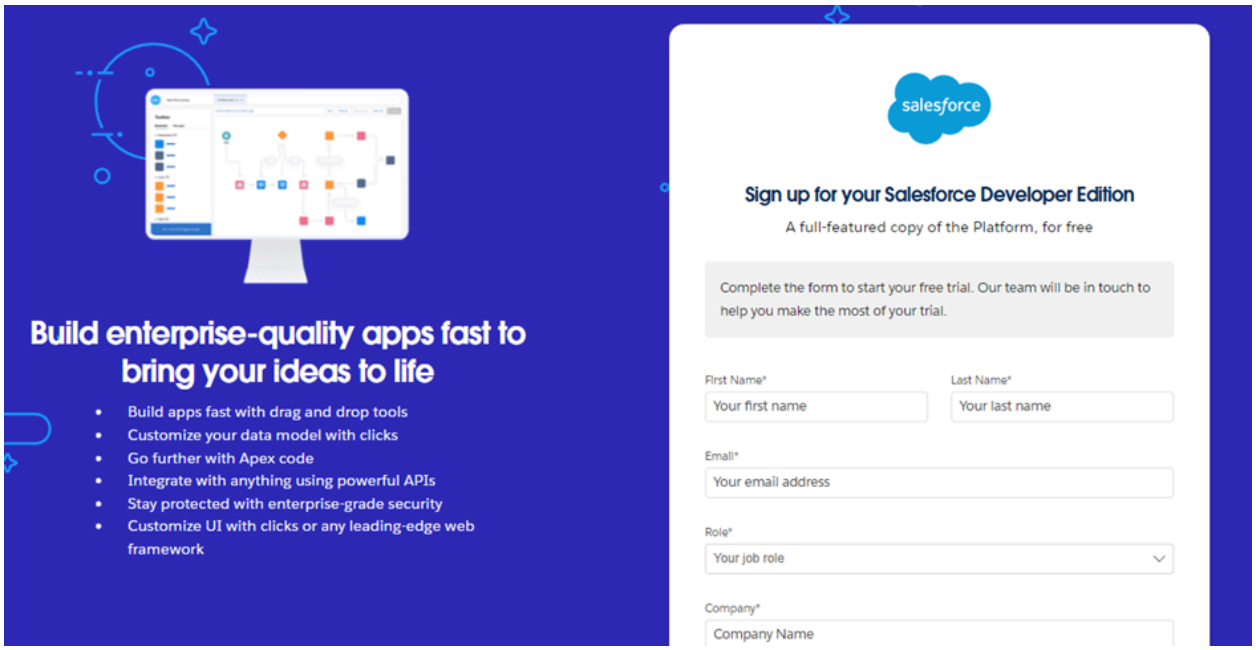
Milestone 1 : Creation of developer account
Milestone 2 : Object Creation
Milestone 3 : Tabs
Milestone 4 : The Lightning App
Milestone 5 : Fields & Relationships
Milestone 6 : Apex Triggers
Milestone 7 : Email Alert
Milestone 8 : Flow
Milestone 9 : Conclusion

Implementation

Milestone 1 - Salesforce developer account creation :

Activity 1: Creating Developer Account:
Creating a developer org in salesforce.

1.Go to https://developer.salesforce.com/signup
2.On the sign up form, enter the following details :



First name & Last name

1) Email
2) Role : Developer
3) Company : College or Company Name
4) County : India
5) Postal Code : pin code
6) Username : should be a combination of your name and company

This need not be an actual email id, you can give anything in that format : username@organization.com

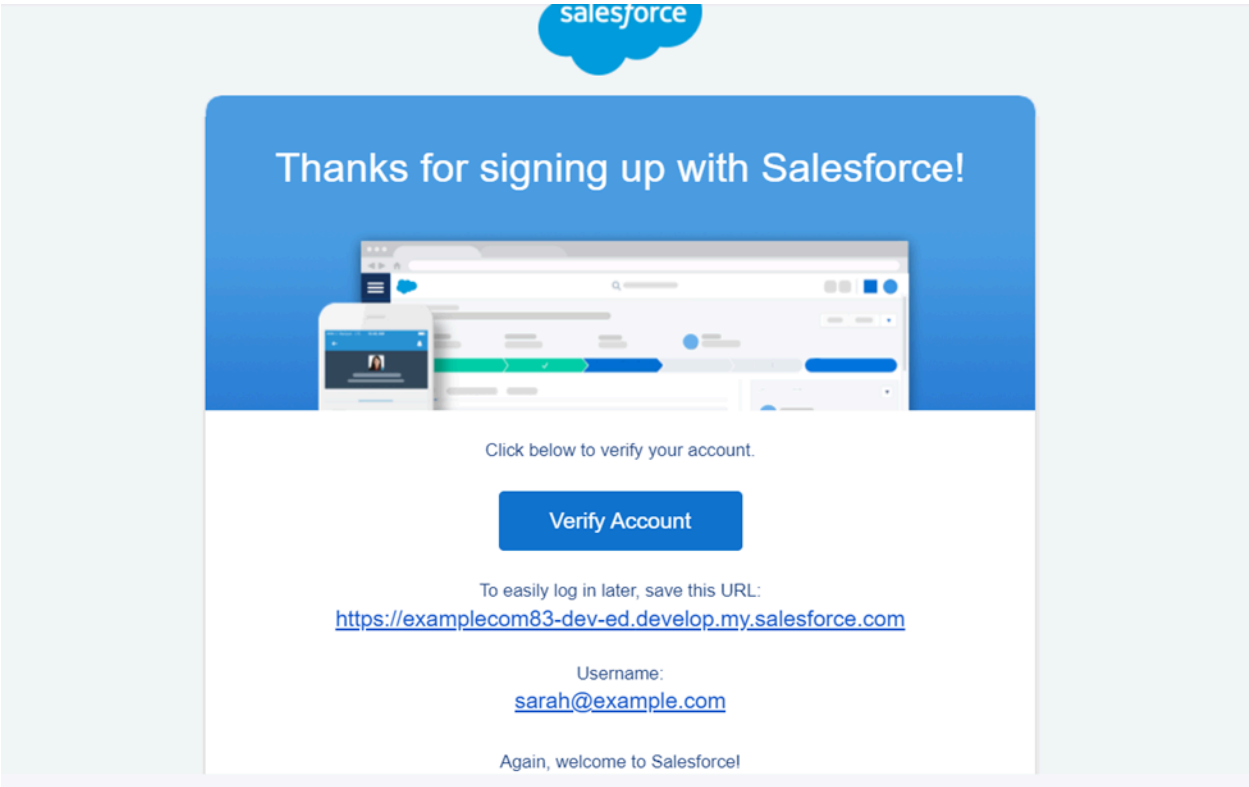
Click on sign me up after filling these.

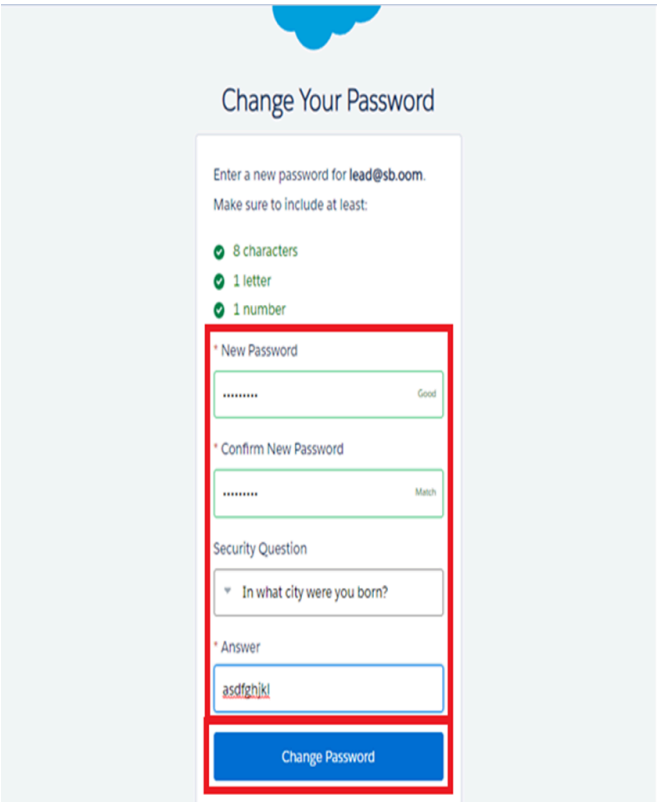
Activity 2: Account Activation :

1.Go to the inbox of the email that you used while signing up. Click on the verify account to activate your account. The email may take 5-10mins.

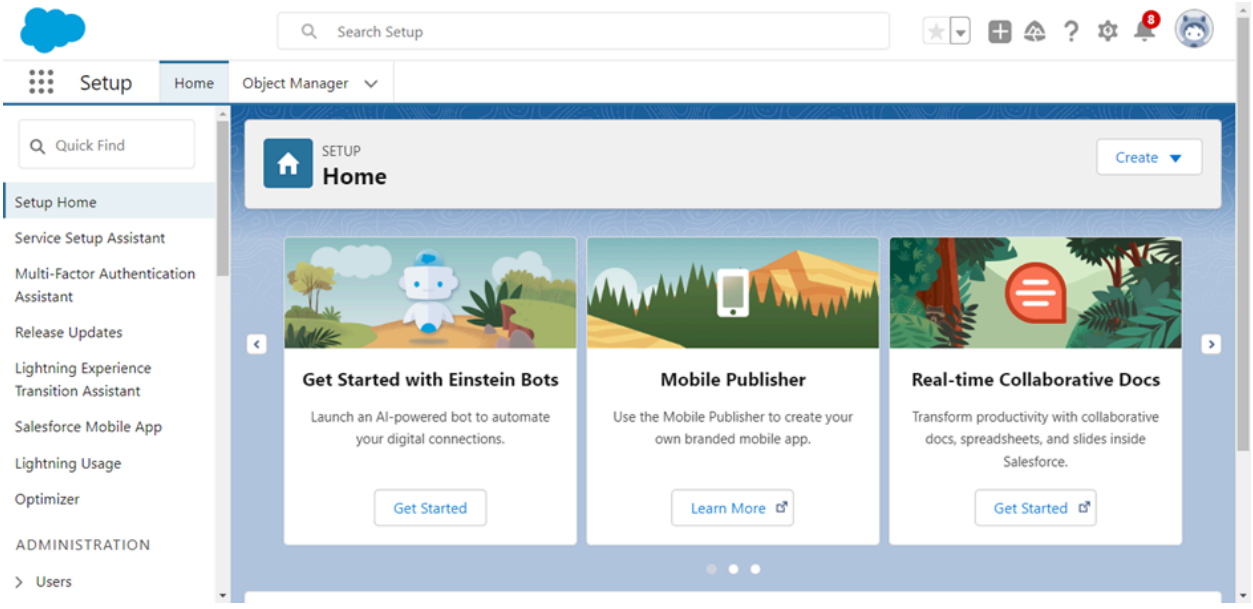
2.Click on Verify Account.

3. Give a password and answer a security question and click on change password.





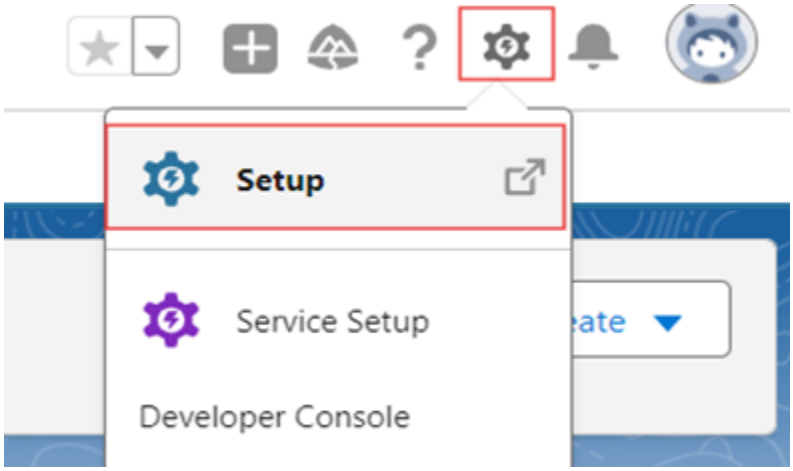
4.Then you will redirect to your salesforce setup page.



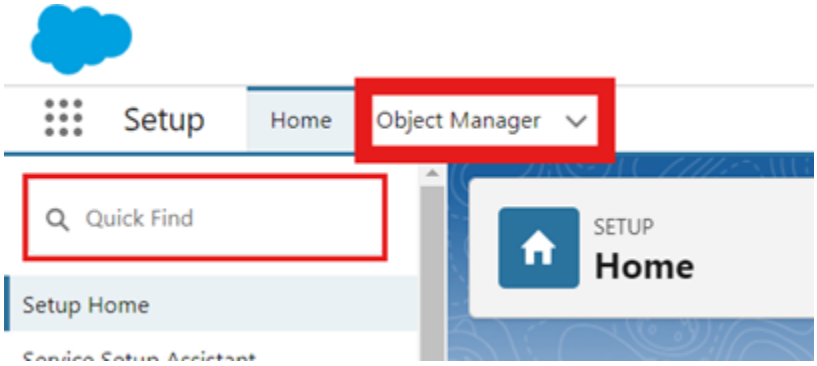
Milestone 2 - Object Creation

Activity 1 :Customer contact details

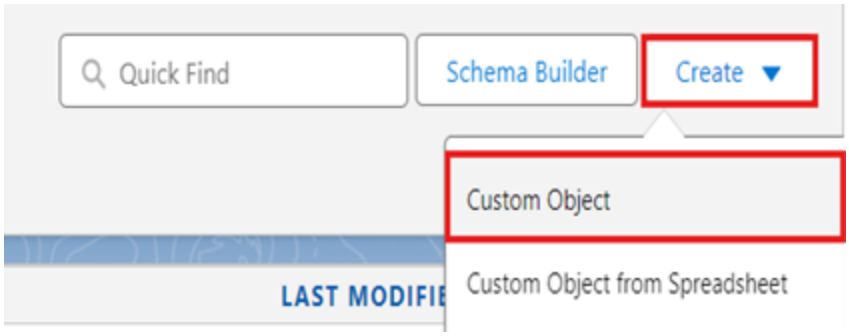
1.In your Salesforce org, click gear icon on the top left and select Setup to open Setup.



2.Click the Object Manager tab. If you don't see it, enter Object Manager in the Quick Find box.



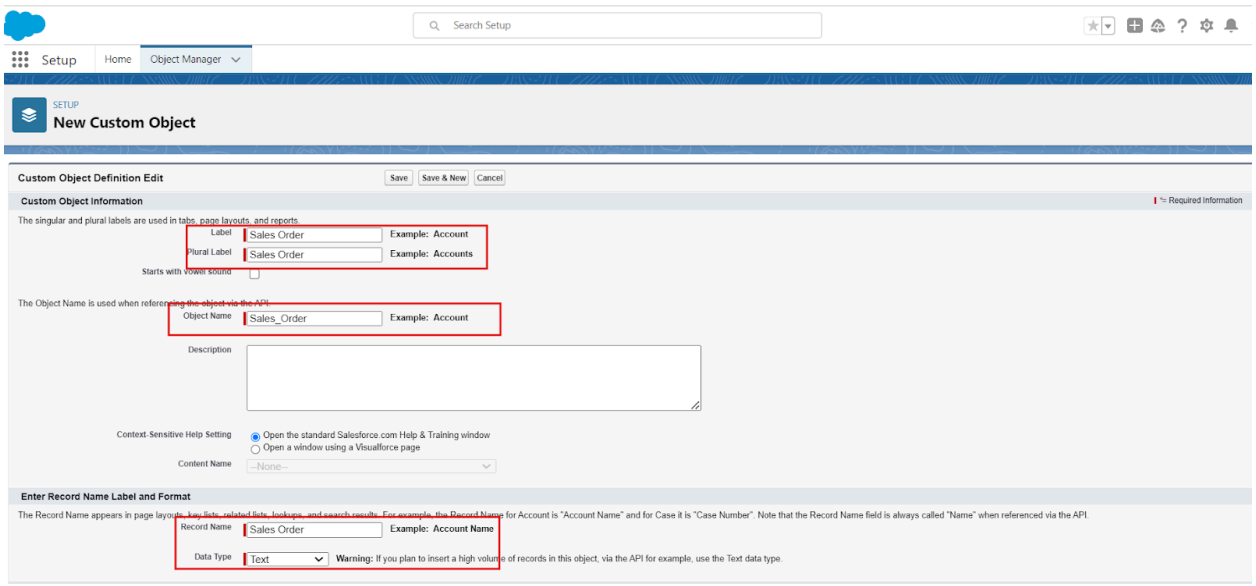
3.On the Object Manager page, click Create | Custom Object.

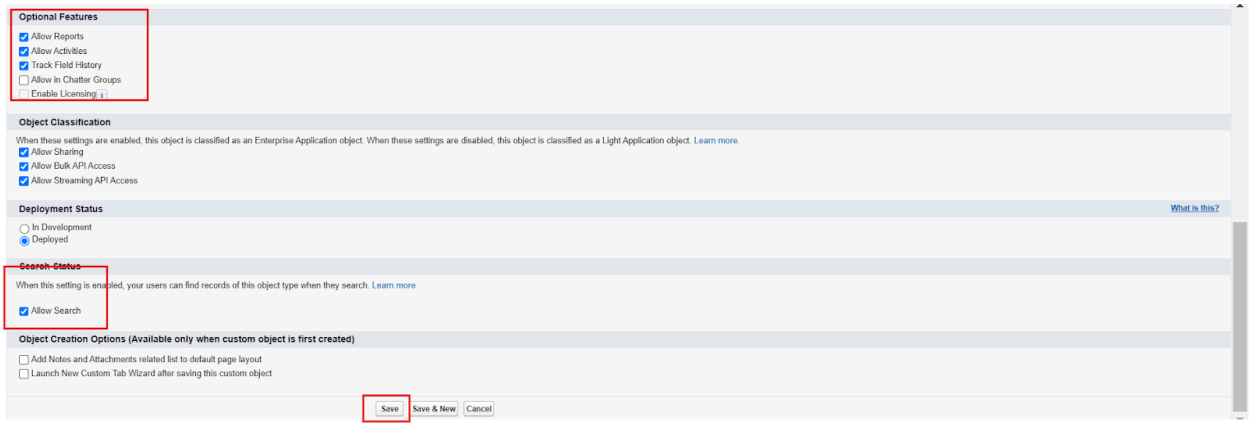


Activity 1 : Sales Order

1.From the setup page → Click on Object Manager → Click on Create → Click on Custom Object.

- **Label** : Sales Order
- **Plural Label** : Sales Orders
- Enter Record Name Label and Format
- Record Name : Sales Order
- Data Type : Text
- In Optional features : check the boxes for Allow Reports | Allow Activities | Track Field History.
- Search Status : check the box for Allow Search.
- Save





Activity 2 : Inventory

2.From the setup page → Click on Object Manager → Click on Create → Click on Custom Object.

- Label : Inventory
- Plural Label : Inventories
- Enter Record Name Label and Format
- Record Name : Inventory Name
- Data Type : Text
- In Optional features : check the boxes for Allow Reports | Allow Activities | Track Field History.
- Search Status : check the box for Allow Search.
- Save.

Activity 3 : Suppliers

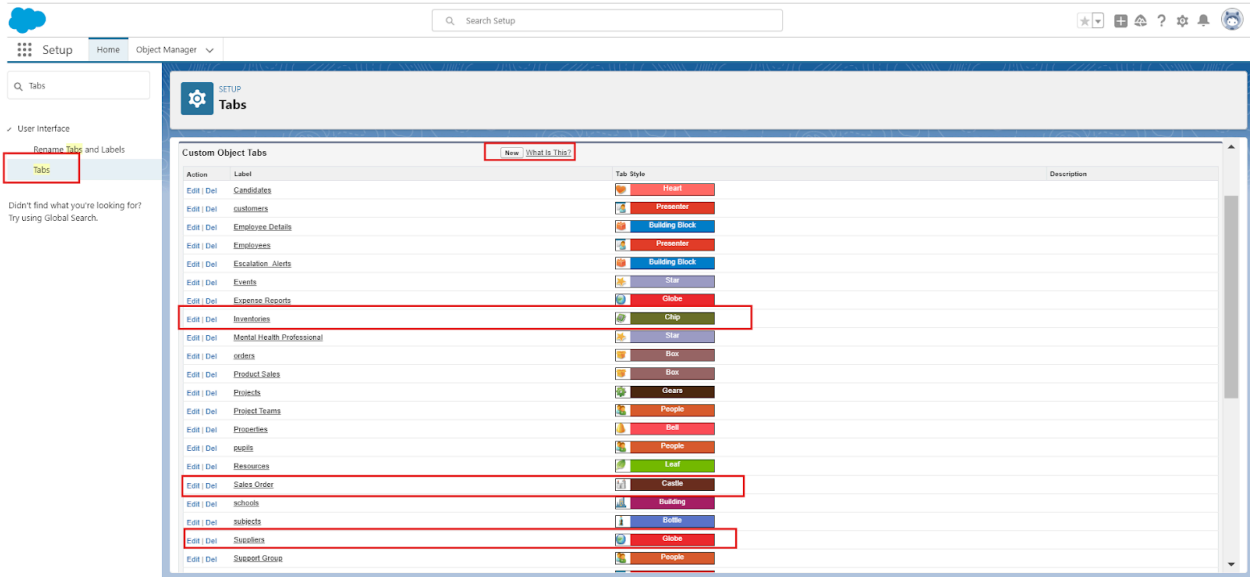
3. From the setup page → Click on Object Manager → Click on Create → Click on Custom Object.

- Label : Supplier
- Plural Label :Suppliers
- Enter Record Name Label and Format
- Record Name : Supplier Name
- Data Type : Text
- In Optional features : check the boxes for Allow Reports | Allow Activities | Track Field History.
- Search Status : check the box for Allow Search.
- Save.

Milestone 3 - Tabs

Activity 1 : Custom tabs creation

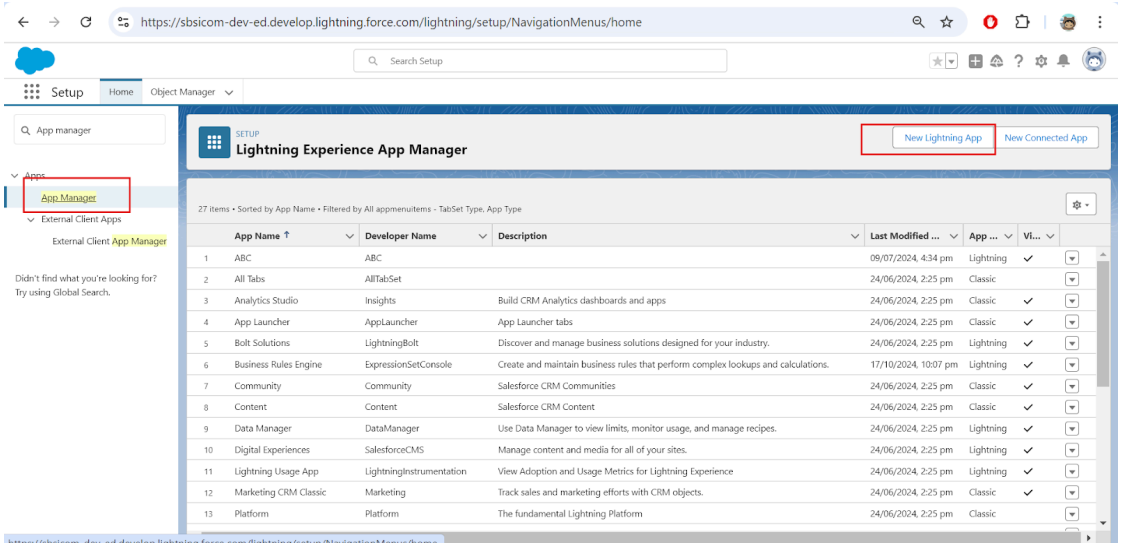
1.Go to setup page → type Tabs in Quick Find bar → click on tabs → New (under custom object tab)
2.Select Object(Sales order) → Select the tab style → Next (Add to profiles page) keep it as default → Next (Add to Custom App) uncheck the include tab .
3.Make sure that the Append tab to users' existing personal customizations is checked.
4.Click save.
5.Repeat the same steps for all objects.



Milestone 4 - The Lightning App

Activity 1 : Create a lightning app

1.Go to setup page → search “app manager” in quick find → select “app manager” → click on New lightning App.



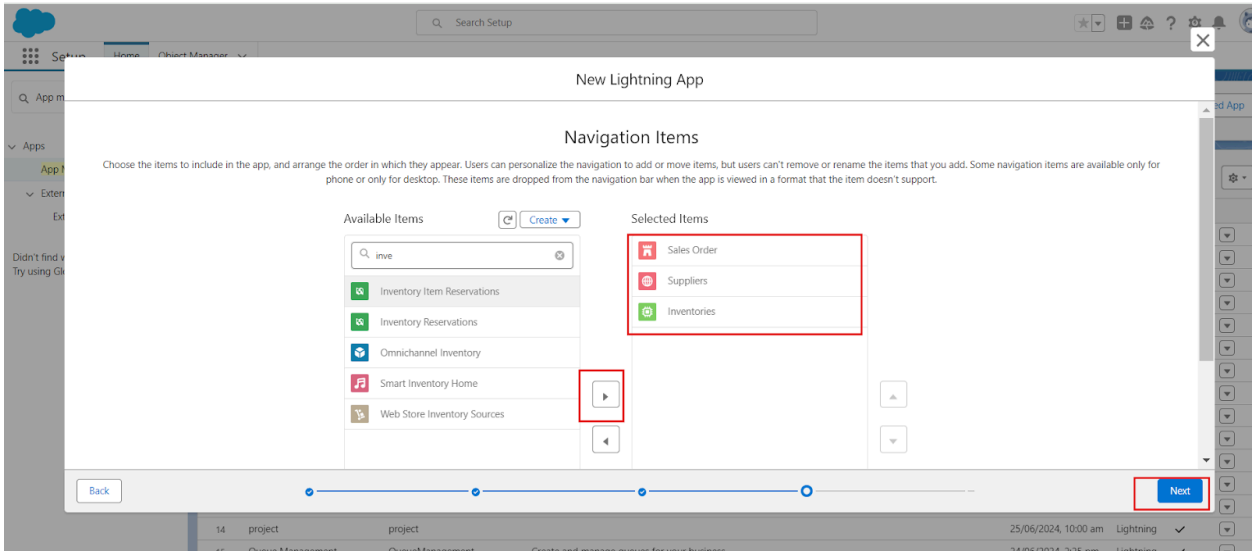
2.Fill the app name in app details and branding as follow
App Name :Smart Inventory Management
Developer Name : Smart_Inventory_Management
Add image optional (if you want to give any image you can otherwise not mandatory) - Add Primary color Hex or leave it to default.
Then click Next.

3. In App options
Navigation style : Standard navigation
Setup experience : setup
Supporters form factors : Desktop and phone
Then click Next

4. In Utility items
Utility Bar alignment : Default
Then click Next.

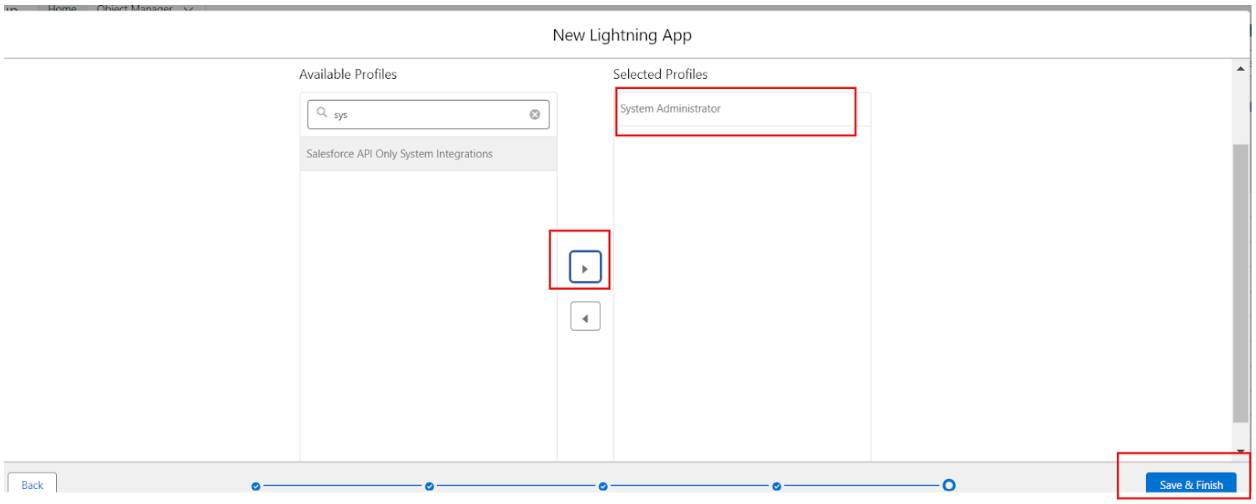
5. Navigation items
Select the created Custom Objects and required standard objects

- Sales Order
- Inventories
- Supplier



- Click Save

6. To Add User Profiles : System Administrator



7.Click Save & Finish.

Milestone 5 : Sales Order

Activity 1 : Create Custom fields for Sales Order object

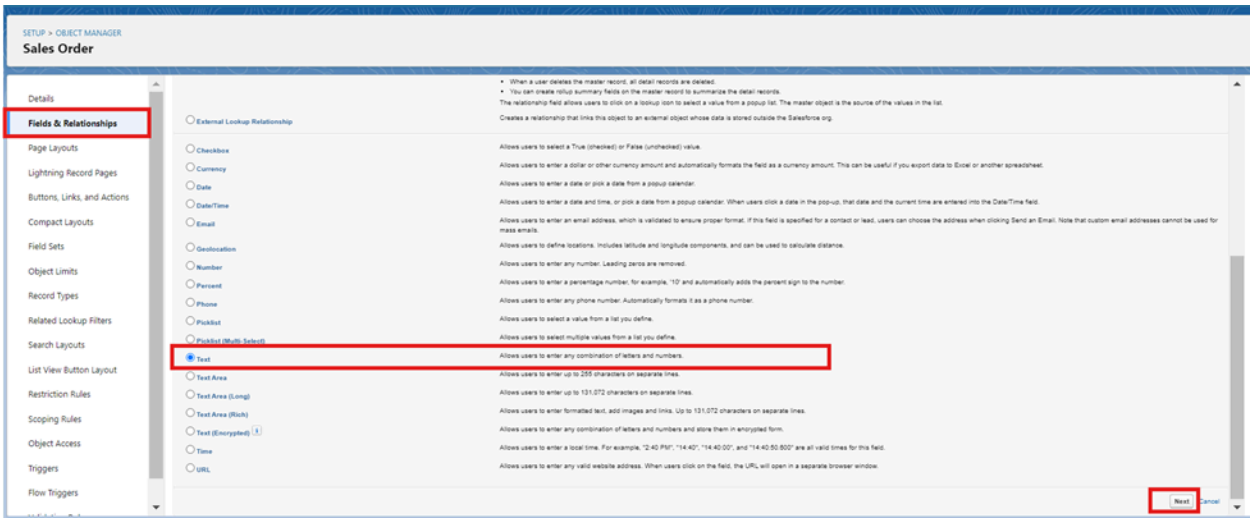
1.In your Salesforce org, click gear icon on the top left and select Setup to open Setup.
2.Click the Object Manager tab. If you don't see it, enter Object Manager in the Quick Find box.

3.From the object manager page, In the Quick Find box, Search for the custom object you just created : Sales Order

4.From the sidebar, click Fields & Relationships. Notice that there are already some fields there. Those are the standard fields.

5.Click New to create a custom field. Tip: Before creating a new field, do a quick search to make sure a similar one doesn't already exist.

6.Next, choose a data type as Text. Choosing a data type helps you format the field input.



7. Click on next.

8. Data Type : Text
   Field Label: Customer Name
   Field Name : Name
   Length : 50
   Click on Next → Next → Save and new.

1. Repeat the Same steps for remaining fields

2. Data Type : Phone
   Field Label: Customer Mobile
   Field Name : Customer_Mobile__c
   Length : 20
   Click on Next → Next → Save and new.

3. Data Type : E-mail
   Field Label : Customer Email
   Field Name : Customer_Email__c
   Click on Next → Next → Save and new.

4. Data Type : Auto Number
   Field Label : Order Number
   Field Name : Order_Name_c
5. Data Type : Number
   Field Label : Quantity Ordered
   Field Name : Quantity_Ordered__c
   Click on Next → Next → Save and new.

6. Data Type : Date
   Field Label : Order Date
   Field Name : Order_Date__c
   Click on Next → Next → Save and new.

7. Data Type : Picklist
   Field Label : Status
   Field Name : Status_c
   Values : Confirmed ,Shipped ,Completed , Canceled
   Click on Next → Next → Save and new.

8. Data Type : Lookup
   Related To : Inventory
   Field Label : Product
   Field Name : Product__c
   Click on Next → Next → Save and new.

Activity 2 : Create Custom fields for Inventory object

1.Data Type : Look-up Relationship
Related To :Supplier
Field Label: Supplier
Field Name : Supplier_c
Length : 80
Click on Next → Next → Save and new.

2.Data Type : Text
Field Label: Inventory Name
Field Name : Name
Click on Next → Next → Save and new.

3.Data Type : Number
Field Label: Reorder Level
Field Name : Reorder_Level_c
Click on Next → Next → Save and new.

4.Data Type : Number
Field Label: Stock Quantity
Field Name : Stock_Qunatity_c
Click on Next → Next → Save and new.

Activity 3 : Create Custom fields for Supplier Object

1.Data Type : Text
Field Label: Supplier Name
Field Name : Name
Length : 50
Click on Next → Next → Save and new.

2.Data Type : Email
Field Label: Contact Info
Field Name : Contact_Info__c
Length : 80
Click on Next → Next → Save and new.

<u>Milestone 6 :Triggers</u>

Activity 1 : Create a Trigger for sending reorder notifications to suppliers when stock falls below the reorder level.

Step 1: Login to Salesforce

- **Log in** to your Salesforce account with administrative privileges.

Step 2: Navigate to Developer Console

i) **Navigate to Setup**: Click on the gear icon ⚙ (Setup) at the top-right corner of the screen.
ii) **Open Developer Console**: Select the "Developer Console" option from the Setup menu. The Developer Console will open in a new browser tab or window.

Step 3: Create the Apex Trigger

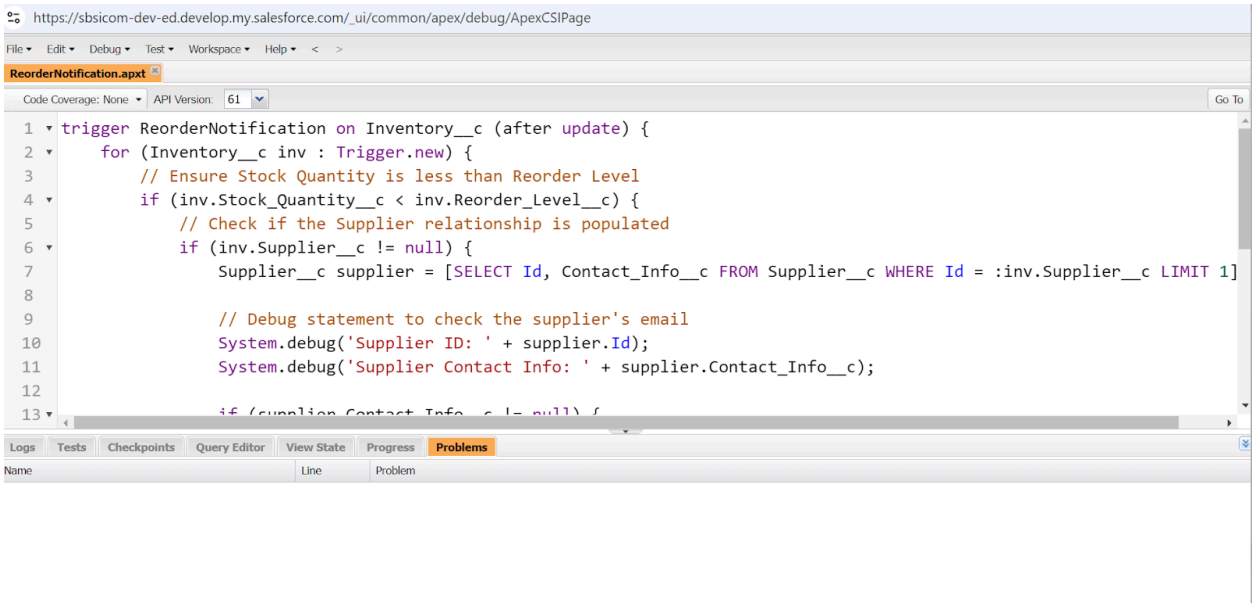
1. In the Developer Console window, click on "File" in the top menu.
2. **Select New**: From the dropdown menu under "File," select "New."
3. **Choose Apex Trigger**: In the submenu, select "Apex Trigger." This opens a new editor tab for writing your trigger.

Step 4: Define Your Trigger

- **Give Trigger Name**: ReorderNotification
- **Select Object**: Inventory_c

```
trigger ReorderNotification on Inventory__c (after update) {
  for (Inventory__c inv : Trigger.new) {
    // Ensure Stock Quantity is less than Reorder Level
    if (inv.Stock_Quantity__c < inv.Reorder_Level__c) {
      // Check if the Supplier relationship is populated
      if (inv.Supplier__c != null) {
        Supplier__c supplier = [SELECT Id, Contact_Info__c FROM Supplier__c WHERE Id
= :inv.Supplier__c LIMIT 1];

        // Debug statement to check the supplier's email
        System.debug('Supplier ID: ' + supplier.Id);
        System.debug('Supplier Contact Info: ' + supplier.Contact_Info__c);

        if (supplier.Contact_Info__c != null) {
          Messaging.SingleEmailMessage mail = new Messaging.SingleEmailMessage();
          mail.setToAddresses(new String[] { supplier.Contact_Info__c });
          mail.setSubject('Reorder Notification');
          mail.setPlainTextBody('Please reorder product: ' + inv.Name +
                                ', Current stock is: ' + inv.Stock_Quantity__c);
          Messaging.sendEmail(new Messaging.SingleEmailMessage[] { mail });
        } else {
          System.debug('No valid email found for supplier: ' + inv.Supplier__c);
        }
      } else {
        System.debug('Supplier relationship is null for Inventory: ' + inv.Id);
```

```
        }
    }
  }
}
```



Activity 2: Create a Trigger to manage inventory stock levels based on sales orders.

Step 1: Create the Apex Trigger

1. In the Developer Console window, click on "File" in the top menu.
2. **Select New**: From the dropdown menu under "File," select "New."
3. **Choose Apex Trigger**: In the submenu, select "Apex Trigger." This opens a new editor tab for writing your trigger.

Step 2: Define Your Trigger

Give Trigger Name: UpdateStockQuantity
Select Object: Sales_Order_c
trigger UpdateStockQuantity on Sales_Order__c (after insert, after update) {

// Collect product IDs (related Inventory records) from Sales Orders

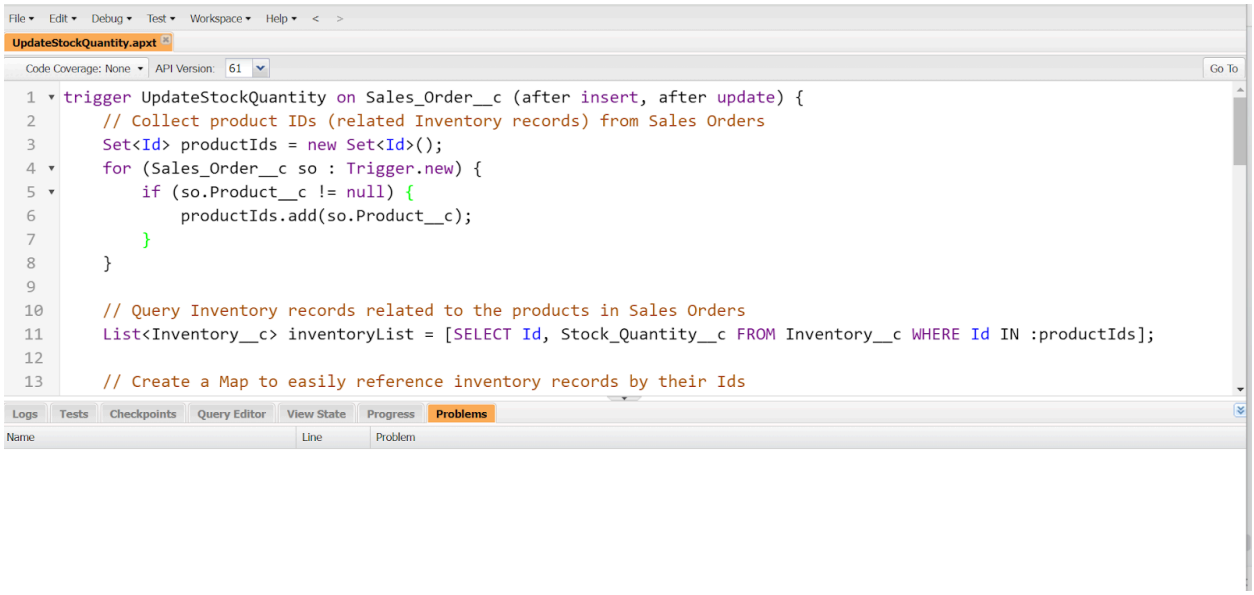
Set<Id> productIds = new Set<Id>();

for (Sales_Order__c so : Trigger.new) {

```
        if (so.Product__c != null) {
            productIds.add(so.Product__c);
        }
    }

    // Query Inventory records related to the products in Sales Orders
    List<Inventory__c> inventoryList = [SELECT Id, Stock_Quantity__c FROM Inventory__c WHERE Id IN :productIds];

    // Create a Map to easily reference inventory records by their Ids
    Map<Id, Inventory__c> inventoryMap = new Map<Id, Inventory__c>(inventoryList);

    // Loop through each Sales Order to update the respective inventory
    for (Sales_Order__c so : Trigger.new) {
        if (so.Product__c != null && inventoryMap.containsKey(so.Product__c)) {
            Inventory__c inventory = inventoryMap.get(so.Product__c);

            // Log inventory and order details for debugging
            System.debug('Inventory Before Update: ' + inventory.Stock_Quantity__c);
            System.debug('Sales Order Quantity Ordered: ' + so.Quantity_Ordered__c);

            // Check if this is an update operation
            if (Trigger.isUpdate && Trigger.oldMap.containsKey(so.Id)) {
                Decimal previousQuantity = Trigger.oldMap.get(so.Id).Quantity_Ordered__c;
```

```
            // Restore the previous stock quantity (add back the previous quantity)
            if (previousQuantity != null) {
                inventory.Stock_Quantity__c += previousQuantity;
                System.debug('Restored Stock Quantity: ' + inventory.Stock_Quantity__c);
            }
        }

        // Reduce the stock by the new quantity (for both insert and update)
        Decimal newQuantity = so.Quantity_Ordered__c;
        if (newQuantity != null) {
            inventory.Stock_Quantity__c -= newQuantity;
            System.debug('Updated Stock Quantity: ' + inventory.Stock_Quantity__c);
        }
    } else {
          System.debug('Product not found in Inventory Map for Sales Order Product__c: '
+ so.Product__c);
    }
  }

  // Update inventory records in bulk
  if (!inventoryList.isEmpty()) {
    try {
        update inventoryList;
```

```
            System.debug('Inventory records updated successfully.');
        } catch (Exception e) {
            System.debug('Error updating inventory: ' + e.getMessage());
        }
    }
}
```



Milestone 7 : Email Alert

Activity 1 : Creating an Email Template

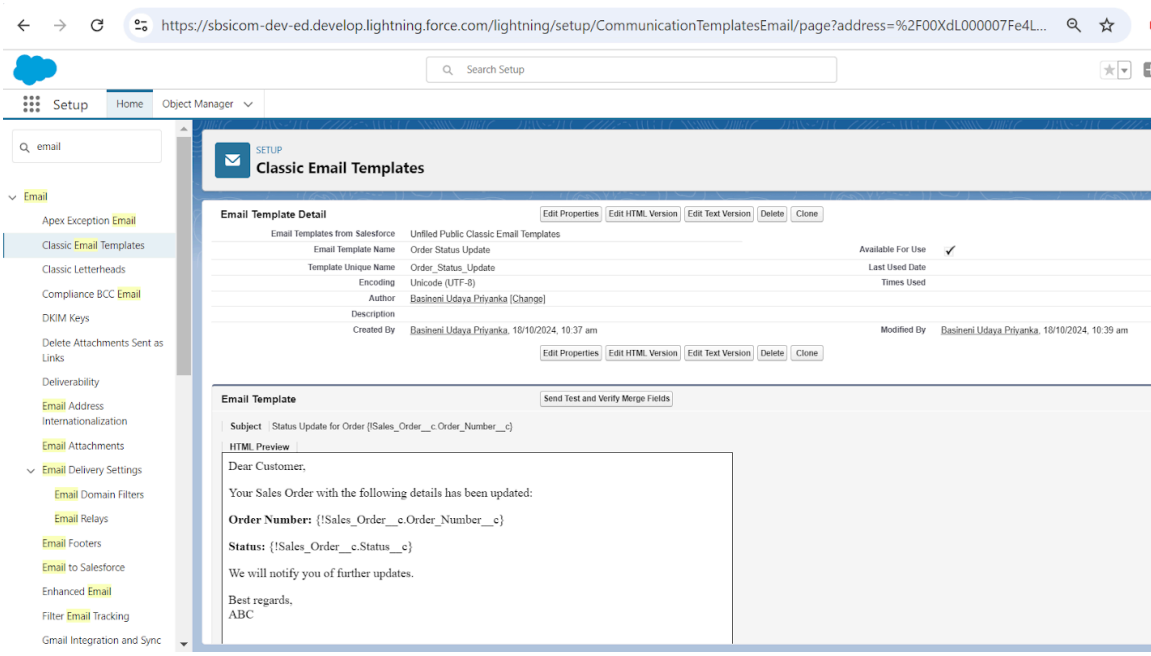
This step involves designing a custom email template that is used to send notifications to customers regarding the status of their orders. It ensures consistent, professional communication.

Step 1: Create Email Template

1. **Login to Salesforce**: Use administrative credentials to log in.
2. **Navigate to Email Templates**:
    - Go to **Setup**.
    - In the Quick Find box, type **Classic Email Templates**.
    - Click **Classic Email Templates**.
3. **Create New Email Template**:

- Click **New Template**.
- Choose the type of template (e.g., **Custom HTML**, **Text**, or **Visualforce**).
- Enter details like:
  - **Email Template Name**: `Order_Status_Notification`.
  - **Subject**: `Order Status Update for Your Order {!Sales_Order_c.Name}`.

■ **Email Body**: Include placeholders for fields such as `{!Sales_Order_c.Order_Status_c}`, `{!Sales_Order_c.Quantity_Ordered_c}`, `{!Sales_Order_c.Product_c}`.



4. **Save the Template**.

Activity 2 : Configuring an Email Alert

Setting up an email alert links the template to the Sales Order object, automating the sending of order status notifications based on specific triggers or conditions

Step 1 : Create Email Alert

1. **Navigate to Email Alerts**:
   - In **Setup**, search for **Email Alerts**.

- Click **New Email Alert**.

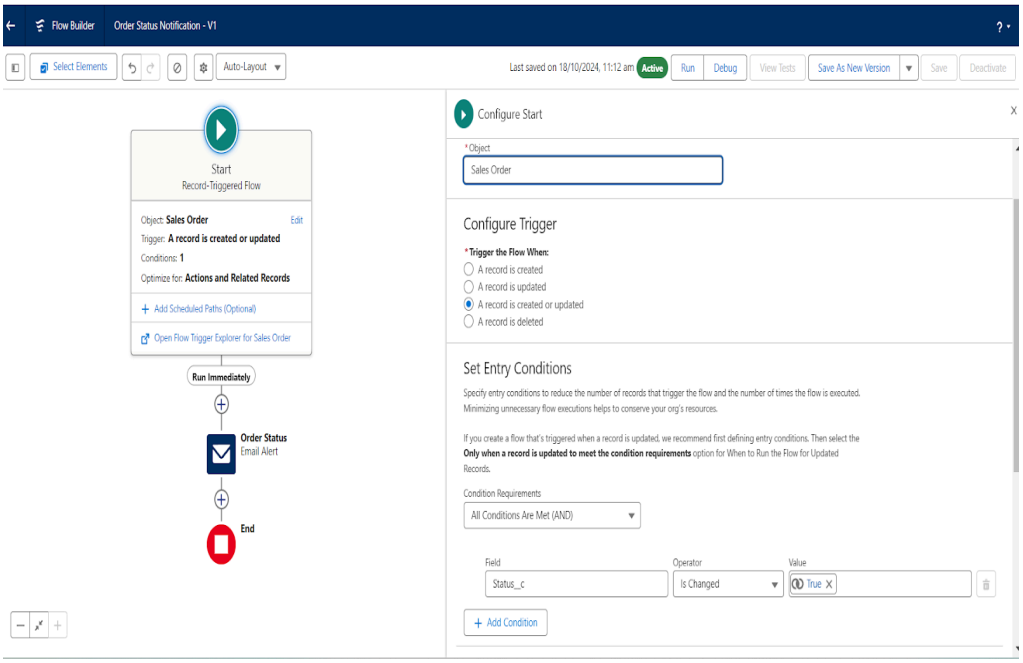
2. **Configure the Email Alert**:
   - **Description**: `Order Status Notification Alert`.
   - **Email Template**: Select the email template you created (`Order_Status_Notification`).
   - **Object**: Choose `Sales_Order_c`.
   - **Recipients**: Choose **Related Contact** and select the field that holds the customer's email, such as `Customer_Email_c` from Sales Order.
   - Click **Save**.

Milestone 8 : Building a Flow

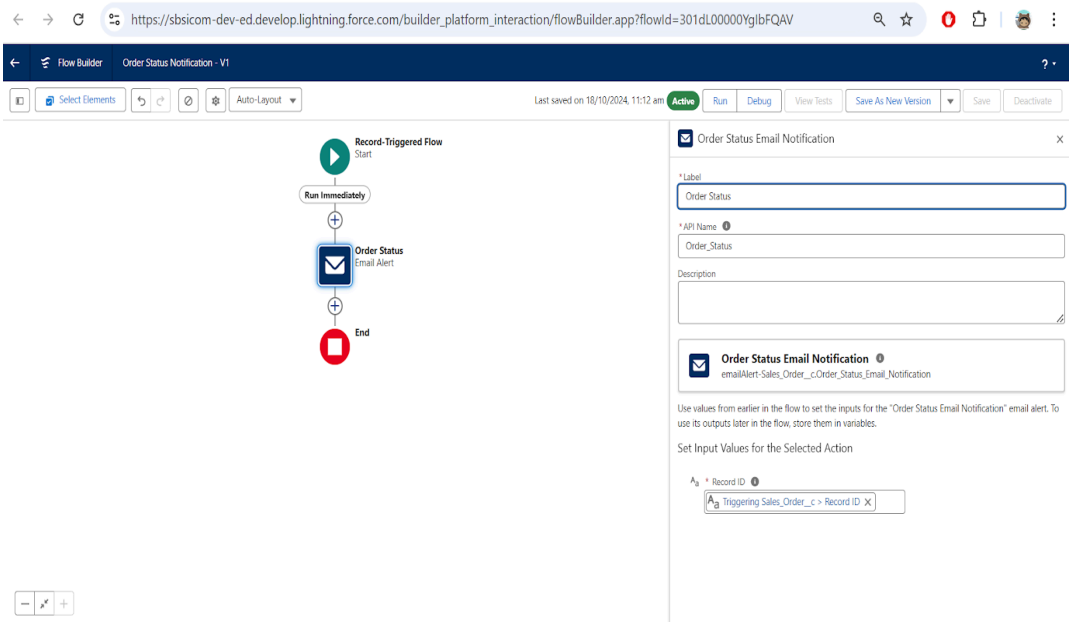
The flow automates the process of sending an email alert whenever a Sales Order's status is updated. It helps streamline communication and ensures customers are informed promptly about their order status.

Step 1: Build the Flow

1. **Navigate to Flows**:
   - In **Setup**, search for **Flows**.
   - Click **Flows** and then **New Flow**.
2. **Select Flow Type**:
   - Choose **Record-Triggered Flow**.
   - Set **Object**: Select **Sales_Order__c**.
   - Set the flow to trigger **after the record is Created and Updated** .
3. **Define Entry Conditions**:
   - Set the condition: **Status__c** is changed True
     Choose **All Conditions are Met (AND)** if you want the flow to run only when all conditions are met.



4. **Add Action for Sending Email**:
   - Click the + icon and select **Action**.
   - In the Action type, search for **Send Email Alert**.
   - Choose the **Email Alert** you created earlier (e.g., `Order Status Notification Alert`).

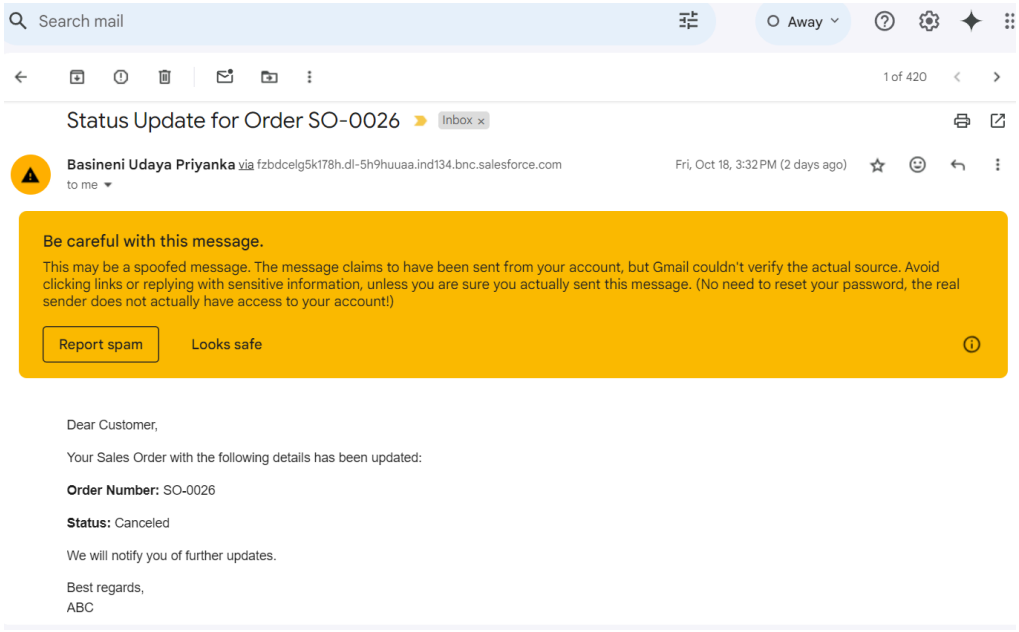


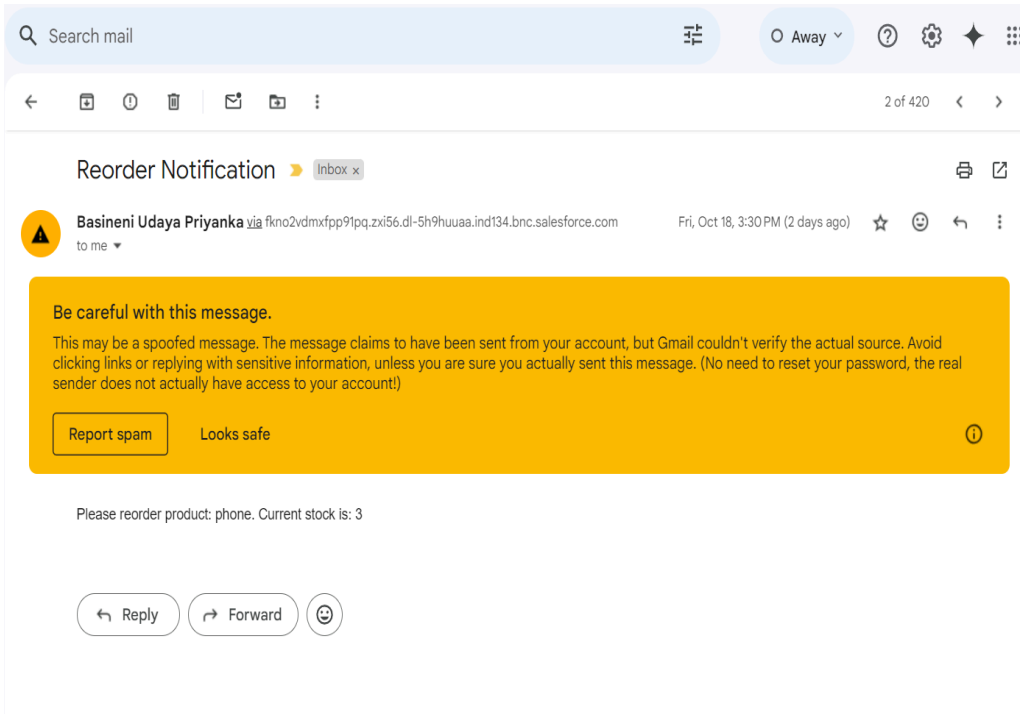
5. **Save and Activate the Flow**:

- Click **Save**, give your flow a meaningful name like `Order Status Notification Flow`.
- Click **Activate** to start the flow.

Milestone 9 : Result

Notifications for status update and reorder :





Milestone 10 : Conclusion

The Smart Inventory Management project utilizing Salesforce with Apex triggers and flows effectively streamlines inventory processes and enhances supplier communication. By automating reorder notifications and stock updates, the system ensures optimal inventory levels are maintained while minimizing the risk of stockouts. The project also facilitates timely order status notifications to customers, improving overall customer satisfaction. This solution exemplifies how Salesforce's robust automation features can transform inventory management, offering a scalable and efficient approach to managing stock, suppliers, and customer interactions in a dynamic retail environment.