

PROJECT TITLE: Medical Inventory Management System

College Name: TERF's Academy College of Arts and Science

College Code: bru5e

TEAM ID: NM2025TMID23506

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INTRODUCTION

Project Overview

The Medical Inventory Management System is a comprehensive Salesforce application designed to streamline and manage various operational aspects of the medical inventory. It can efficiently maintain supplier details, manage purchase orders, track product details and transactions, and monitor expiry dates of products, thereby improving operational efficiency, data accuracy, and reporting capabilities.



Purpose

The system aims to efficiently maintain supplier details, manage purchase orders, track product details and transactions, and monitor the expiry dates of products. Maintain detailed records of suppliers, including contact information. Catalog product information, including descriptions, stock levels. Monitor and track product expiry dates to avoid using expired items. Comprehensive reports to track supplier performance, and purchase orders.

DEVELOPMENT PHASE

Creation of Developer Account

- A Salesforce Developer account was created using the signup link:
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First name: Deepak Last name: N

Job title: Developer Work email: deepakdk01452@gmail.com

Company: TERP'S Academy Co. Country/Region: India

Your org may be provisioned on or migrated to Hyperforce, Salesforce's public cloud infrastructure.

☐ I agree to the Main Services Agreement – Developer Services and Salesforce Program Agreement. I acknowledge, as described in the Developer Documentation: (1) the Developer Edition includes autonomous and other generative AI features, and (2) Salesforce may limit use of those features and the org, and may terminate any org that has been inactive for 45 days.

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Creating a Product Object

The screenshot shows the Salesforce Setup interface for the 'Product' object. The left sidebar contains a list of configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The 'Details' section is selected, showing the following fields:

Field	Value
Description	
API Name	Product_c
Custom	Custom
Singular Label	Product
Plural Label	Products
Enable Reports	<input checked="" type="checkbox"/>
Track Activities	<input checked="" type="checkbox"/>
Track Field History	<input type="checkbox"/>
Deployment Status	Deployed
Help Settings	Standard salesforce.com Help Window

Buttons for 'Edit' and 'Delete' are located in the top right corner of the details section.

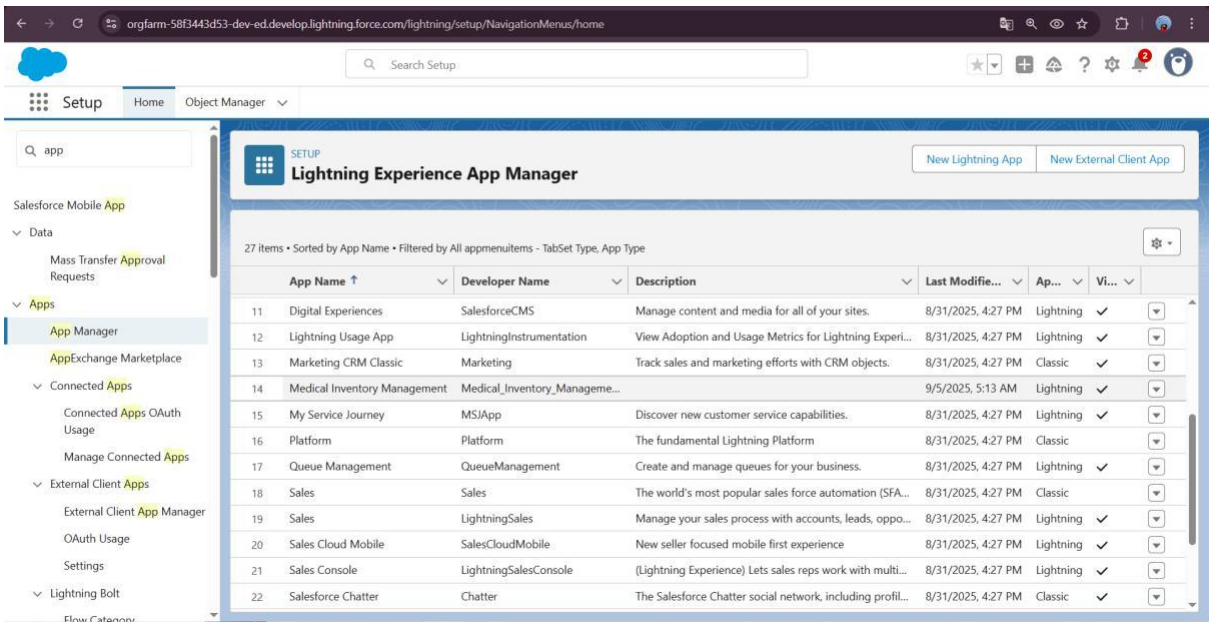
Creating a tab for Product Object and Remaining Tab

The screenshot shows the Salesforce Setup interface for 'Custom Tabs'. The left sidebar contains a search bar and a list of options: User Interface, Rename Tabs and Labels, and Tabs. The 'Tabs' option is selected. The main content area is titled 'Custom Tabs' and includes a 'Help for this Page' link. Below the title, there is a section for 'Custom Object Tabs' with a 'New' button and a 'What is This?' link. The table below shows the existing tabs:

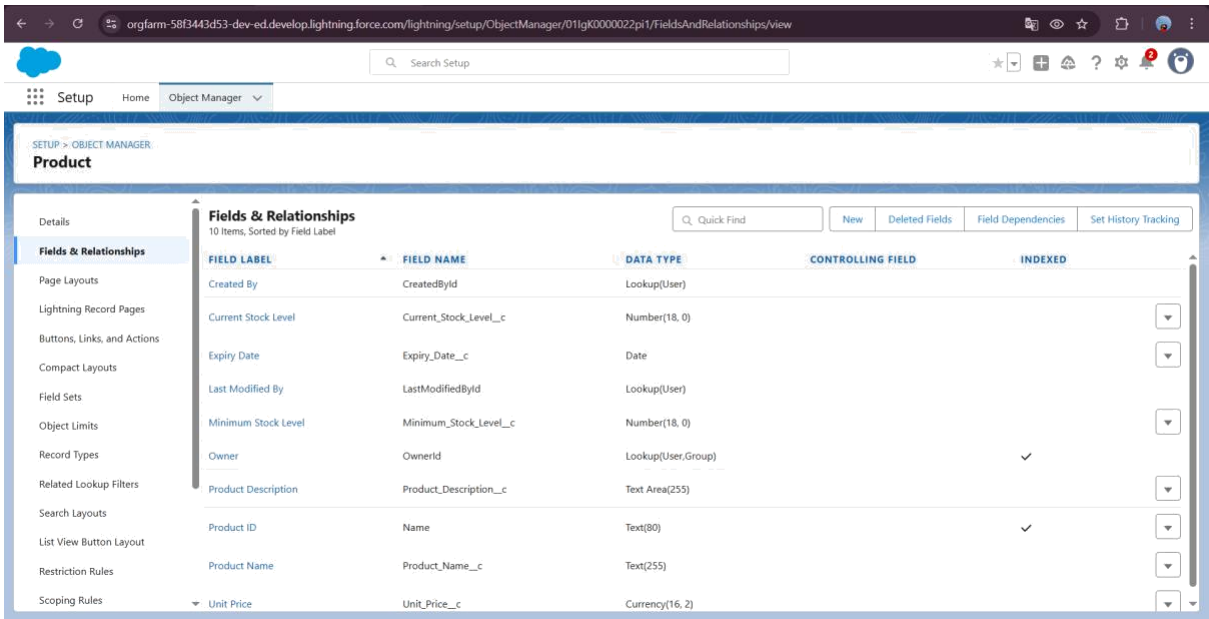
Action	Label	Tab Style	Description
Edit Del	Inventory Transactions	Hands	
Edit Del	Order Items	Box	
Edit Del	Products	Salesforce	
Edit Del	Purchase Orders	Shopping Cart	
Edit Del	Suppliers	Truck	

Below the table, there are sections for 'Web Tabs' and 'Visualforce Tabs', each with a 'New' button and a 'What is This?' link. The 'Web Tabs' section currently shows 'No Web Tabs have been defined'.

Create a Lightning App for Medical Inventory Management



Creating a Text Field in Product Object



Creating Lookup Relationship in Purchase Order Object

Setup

Home

Object Manager

Search Setup

Setup > OBJECT MANAGER

Purchase Order

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Fields & Relationships

10 Items, Sorted by Field Label

Quick Find

New

Deleted Fields

Field Dependencies

Set History Tracking

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Actual Delivery Date	Actual_Delivery_Date__c	Date		
Created By	CreatedById	Lookup(User)		
Expected Delivery Date	Expected_Delivery_Date__c	Date		
Last Modified By	LastModifiedById	Lookup(User)		
Order Count	Order_Count__c	Roll-Up Summary (COUNT Order Item)		
Order Date	Order_Date__c	Date		
Owner	OwnerId	Lookup(User,Group)		✓
Purchase Order ID	Name	Text(80)		✓
Supplier ID	Supplier_ID__c	Lookup(Supplier)		✓
Total Order Cost	Total_Order_Cost__c	Currency(16, 2)		

Creating a Unit Price Formula Field in Order Item object

Setup

Home

Object Manager

Search Setup

Setup > OBJECT MANAGER

Order Item

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Search Layouts

List View Button Layout

Restriction Rules

Scoping Rules

Fields & Relationships

10 Items, Sorted by Field Label

Quick Find

New

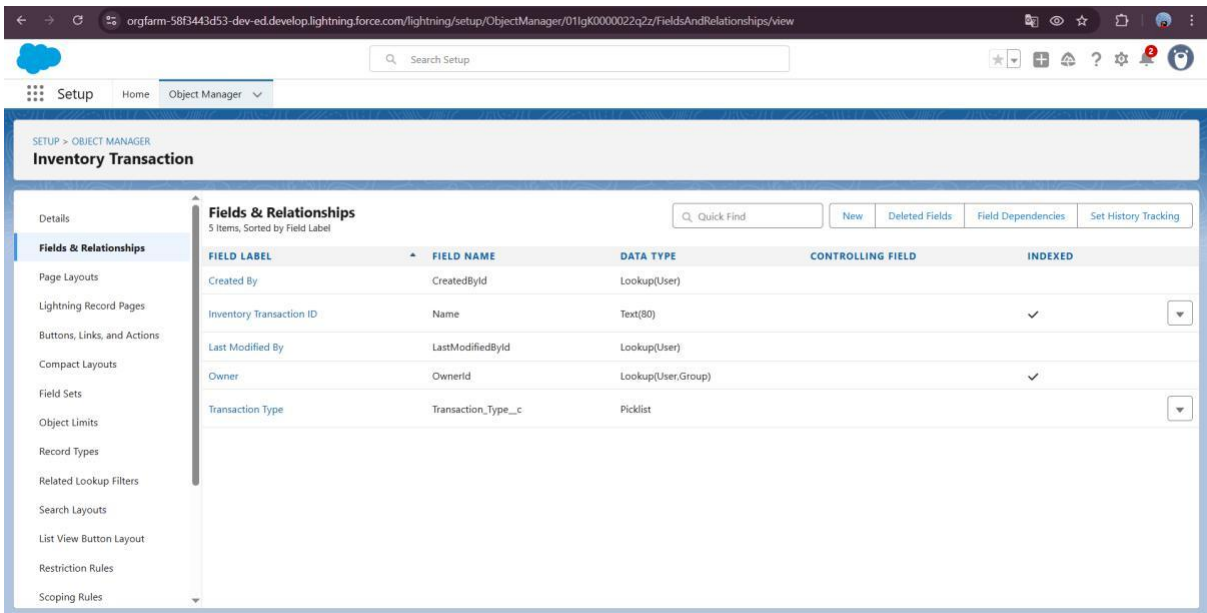
Deleted Fields

Field Dependencies

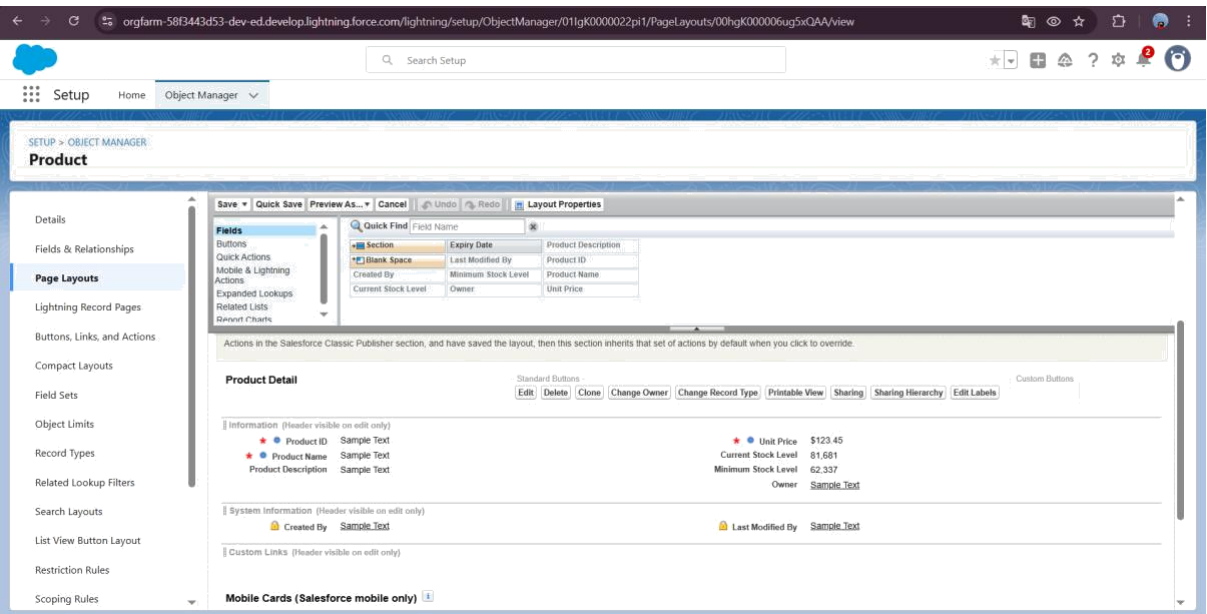
Set History Tracking

Amount	Amount__c	Formula (Currency)		
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Order Item ID	Name	Text(80)		✓
Product ID	Product_ID__c	Lookup(Product)		✓
Purchase Order ID	Purchase_Order_ID__c	Master-Detail(Purchase Order)		✓
Quantity Ordered	Quantity_Ordered__c	Number(18, 0)		
Quantity Received	Quantity_Received__c	Number(18, 0)		
Total Order Cost	Total_Order_Cost__c	Formula (Currency)		
Unit Price	Unit_Price__c	Formula (Currency)		

Creating a Picklist Field in Inventory Transaction Object



To edit a Page Layout in Product Object



To edit a Page Layout in Purchase Order Object

The screenshot shows the Salesforce Setup interface for editing the 'Purchase Order' object page layout. The left sidebar contains a navigation menu with options like Details, Fields & Relationships, Page Layouts (selected), Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled 'Purchase Order' and features a 'Layout Properties' window. This window includes a 'Fields' section with a search bar and a list of fields: Section, Blank Space, Expected Delivery Date, Last Modified By, Purchase Order ID, Order Count, Supplier ID, and Total Order Cost. Below this, there's a 'Purchase Order Detail' section with a 'Standard Buttons' bar containing buttons like Edit, Delete, Clone, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels. The main layout area displays a preview of the page layout with sections for Information (header visible on edit only), System Information (header visible on edit only), and Custom Links (header visible on edit only). The Information section includes fields like Purchase Order ID, Supplier ID, Order Date, Expected Delivery Date, Actual Delivery Date, Order Count, Total Order Cost, and Owner. The System Information section includes Created By and Last Modified By. The Custom Links section is currently empty.

To edit a Page Layout in Order Item Object

The screenshot shows the Salesforce Setup interface for editing the 'Order Item' object page layout. The left sidebar contains a navigation menu with options like Details, Fields & Relationships, Page Layouts (selected), Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled 'Order Item' and features a 'Layout Properties' window. This window includes a 'Fields' section with a search bar and a list of fields: Section, Blank Space, Last Modified By, Quantity Ordered, Order Item ID, Quantity Received, Amount, Product ID, Total Order Cost, and Unit Price. Below this, there's an 'Order Item Detail' section with a 'Standard Buttons' bar containing buttons like Edit, Delete, Clone, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels. The main layout area displays a preview of the page layout with sections for Information (header visible on edit only), System Information (header visible on edit only), and Custom Links (header visible on edit only). The Information section includes fields like Order Item ID, Amount, Product ID, Unit Price, Purchase Order ID, Quantity Ordered, Quantity Received, and Total Order Cost. The System Information section includes Created By and Last Modified By. The Custom Links section is currently empty.

To edit a Page Layout in Inventory Transaction Object

The screenshot shows the Salesforce Setup interface for editing the 'Inventory Transaction' page layout. The left sidebar contains a navigation menu with options like Details, Fields & Relationships, Page Layouts (selected), Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled 'Inventory Transaction' and features a 'Layout Properties' window at the top. Below this, there are sections for 'Information' (with fields like Inventory Transaction ID, Sample Text, Owner, and Transaction Type), 'System Information' (with fields like Created By, Sample Text, and Last Modified By), and 'Custom Links'. A 'Mobile Cards' section is also visible, indicating where mobile-enabled Visualforce pages can be displayed. The bottom of the page shows a 'Related Lists' section.

To edit a Page Layout in Supplier Object

The screenshot shows the Salesforce Setup interface for editing the 'Supplier' page layout. The left sidebar contains a navigation menu with options like Details, Fields & Relationships, Page Layouts (selected), Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled 'Supplier' and features a 'Layout Properties' window at the top. Below this, there are sections for 'Information' (with fields like Supplier ID, Sample Text, Phone Number, Supplier Name, Sample Text, Contact Person, Sample Text, and Owner), 'System Information' (with fields like Created By, Sample Text, and Last Modified By), and 'Custom Links'. A 'Mobile Cards' section is also visible, indicating where mobile-enabled Visualforce pages can be displayed. The bottom of the page shows a 'Related Lists' section.

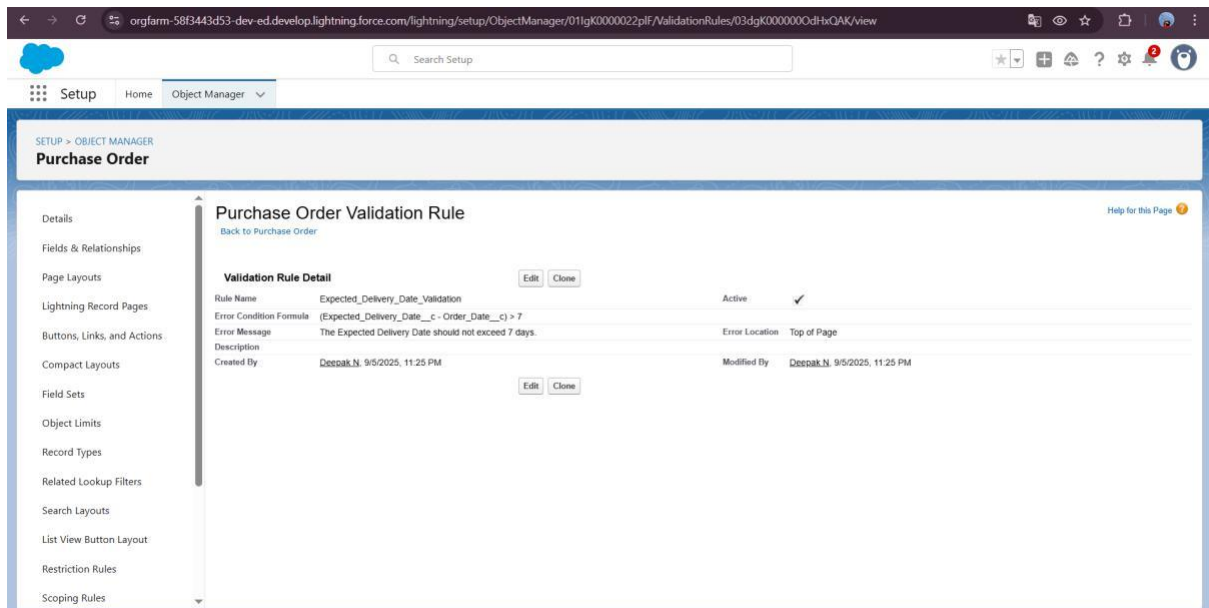
To create a Compact Layout to a Product Object

The screenshot shows the Salesforce Compact Layout Editor for the Product object. The interface includes a left sidebar with navigation options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts (selected), Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled "Edit Product Compact Layout" and "Product Compact Layout". It contains a "Compact Layout Edit" section with "Enter Compact Layout Information" and "Select Compact Layout Fields". The "Enter Compact Layout Information" section has fields for "Label" (Product Compact Layout) and "Name" (Product_Compact_Layout). The "Select Compact Layout Fields" section has two columns: "Available Fields" and "Selected Fields". The "Available Fields" column lists: Created By, Expiry Date, Last Modified By, Minimum Stock Level, Owner, and Product ID. The "Selected Fields" column lists: Unit Price, Product Name, and Current Stock Level. There are "Add" and "Remove" buttons between the columns, and "Top", "Up", "Down", and "Bottom" buttons on the right side of the "Selected Fields" column. A note at the bottom states: "Use SHIFT + click to select adjacent fields. Use CTRL + click to select an assortment of fields."

To create a Compact Layout to a Purchase Order Object

The screenshot shows the Salesforce Compact Layout Editor for the Purchase Order object. The interface includes a left sidebar with navigation options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts (selected), Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled "Edit Purchase Order Compact Layout" and "Purchase Order Compact Layout". It contains a "Compact Layout Edit" section with "Enter Compact Layout Information" and "Select Compact Layout Fields". The "Enter Compact Layout Information" section has fields for "Label" (Purchase Order Compact L) and "Name" (Purchase_Order_Compact). The "Select Compact Layout Fields" section has two columns: "Available Fields" and "Selected Fields". The "Available Fields" column lists: Actual Delivery Date, Created By, Expected Delivery Date, Last Modified By, Order Count, and Owner. The "Selected Fields" column lists: Purchase Order ID, Order Date, Total Order Cost, and Supplier ID. There are "Add" and "Remove" buttons between the columns, and "Top", "Up", "Down", and "Bottom" buttons on the right side of the "Selected Fields" column. A note at the bottom states: "Use SHIFT + click to select adjacent fields. Use CTRL + click to select an assortment of fields."

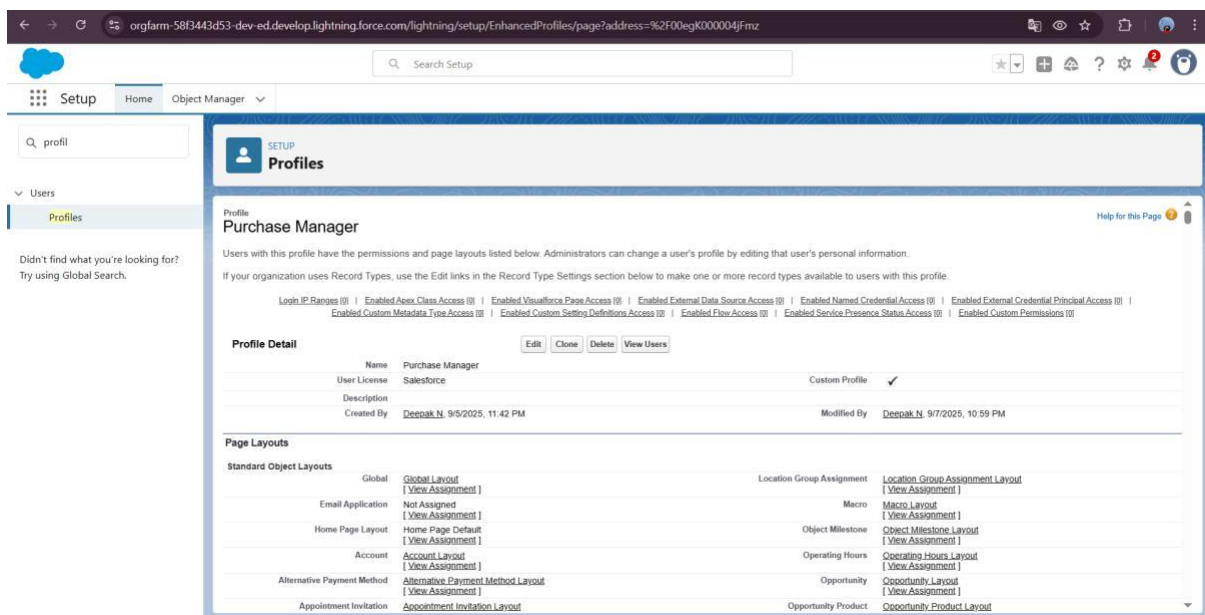
To create an Expected Delivery Date Validation rule to a Employee Object



The screenshot shows the Salesforce Setup interface for creating a Validation Rule for the Purchase Order object. The left sidebar contains navigation links: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main content area is titled "Purchase Order Validation Rule" and includes a "Back to Purchase Order" link. The "Validation Rule Detail" section shows the following information:

Validation Rule Detail		Edit		Clone	
Rule Name	Expected_Delivery_Date_Validation	Active	<input checked="" type="checkbox"/>		
Error Condition Formula	(Expected_Delivery_Date__c - Order_Date__c) > 7				
Error Message	The Expected Delivery Date should not exceed 7 days.				
Description					
Created By	Deepak N.	9/5/2025, 11:25 PM	Modified By	Deepak N.	9/5/2025, 11:25 PM

To create an Purchase Manager Profile



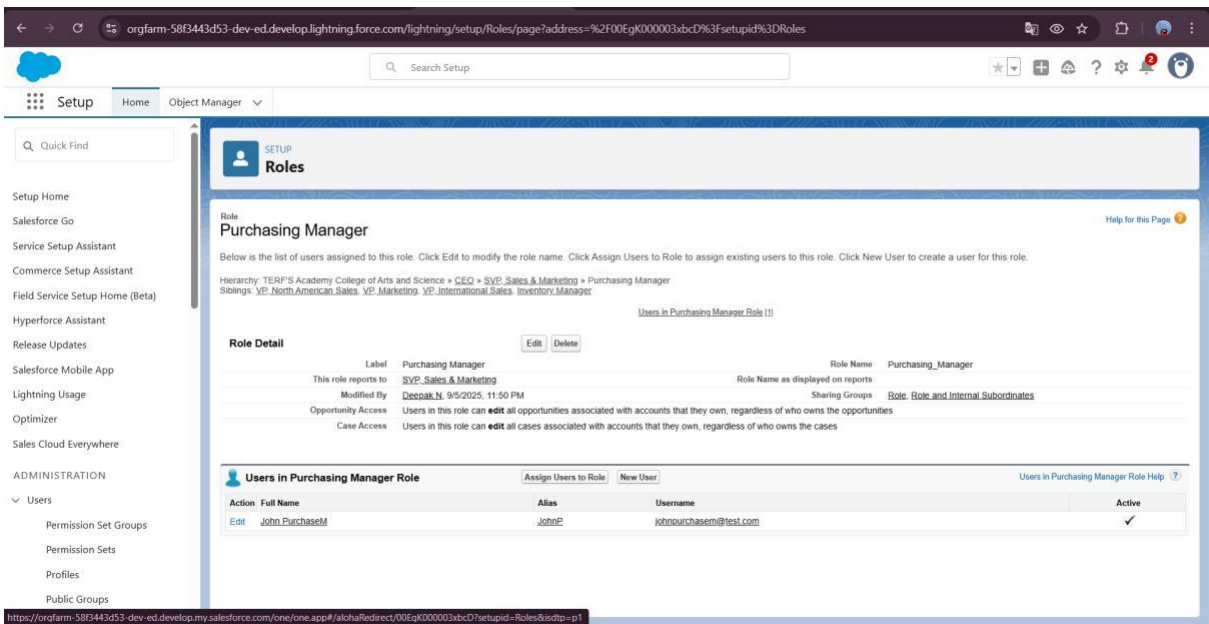
The screenshot shows the Salesforce Setup interface for creating a Profile for the Purchase Manager role. The left sidebar contains navigation links: Users, Profiles, and a search bar. The main content area is titled "Profiles" and includes a "Purchase Manager" profile. The "Profile Detail" section shows the following information:

Profile Detail		Edit		Clone		Delete		View Users	
Name	Purchase Manager	User License	Salesforce	Custom Profile	<input checked="" type="checkbox"/>				
Description									
Created By	Deepak N.	9/5/2025, 11:42 PM	Modified By	Deepak N.	9/7/2025, 10:59 PM				

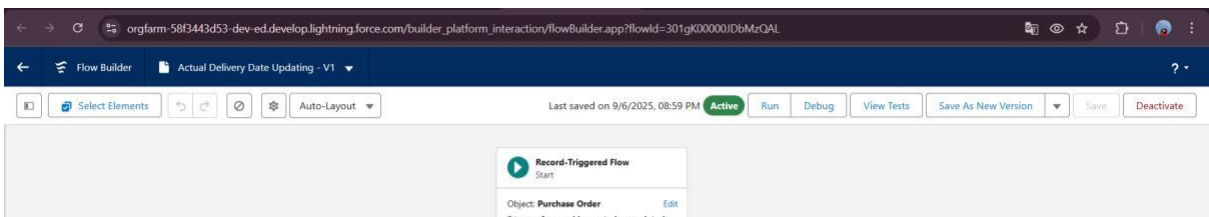
The "Page Layouts" section shows the following assignments:

Standard Object Layouts	Global	Location Group Assignment	Location Group Assignment Layout
Email Application	Not Assigned	Macro	Macro Layout
Home Page Layout	Home Page Default	Object Milestone	Object Milestone Layout
Account	Account Layout	Operating Hours	Operating Hours Layout
Alternative Payment Method	Alternative Payment Method Layout	Opportunity	Opportunity Layout
Appointment Invitation	Appointment Invitation Layout	Opportunity Product	Opportunity Product Layout

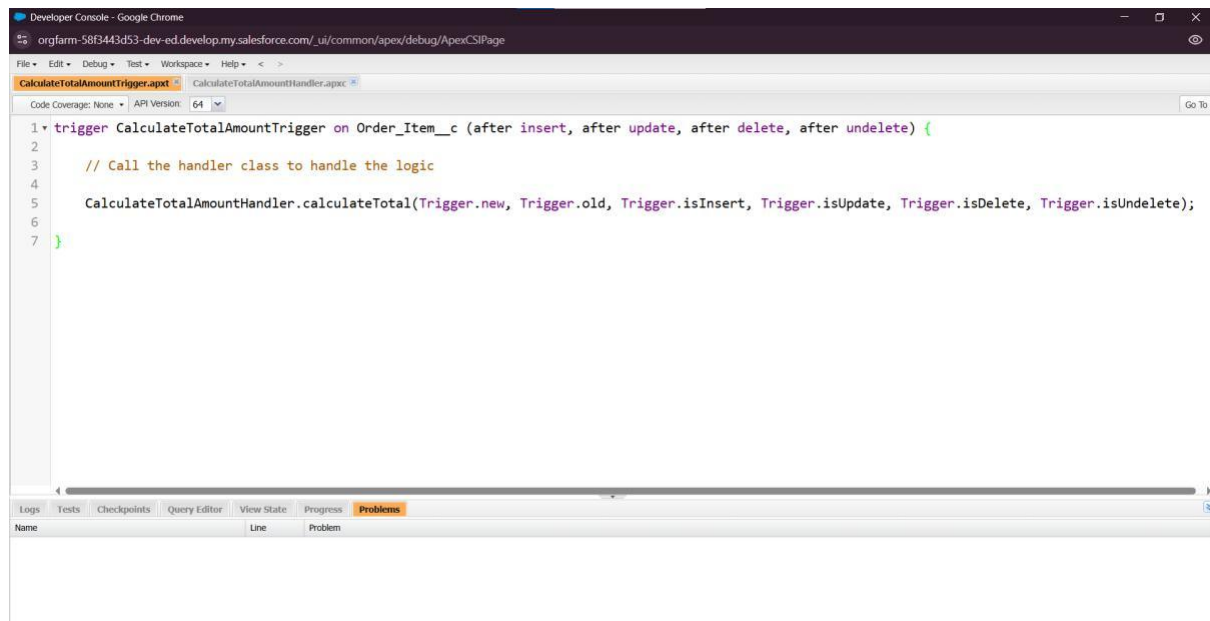
Create a Purchasing Manager Role.



Create Flow to update the Actual Delivery Date.



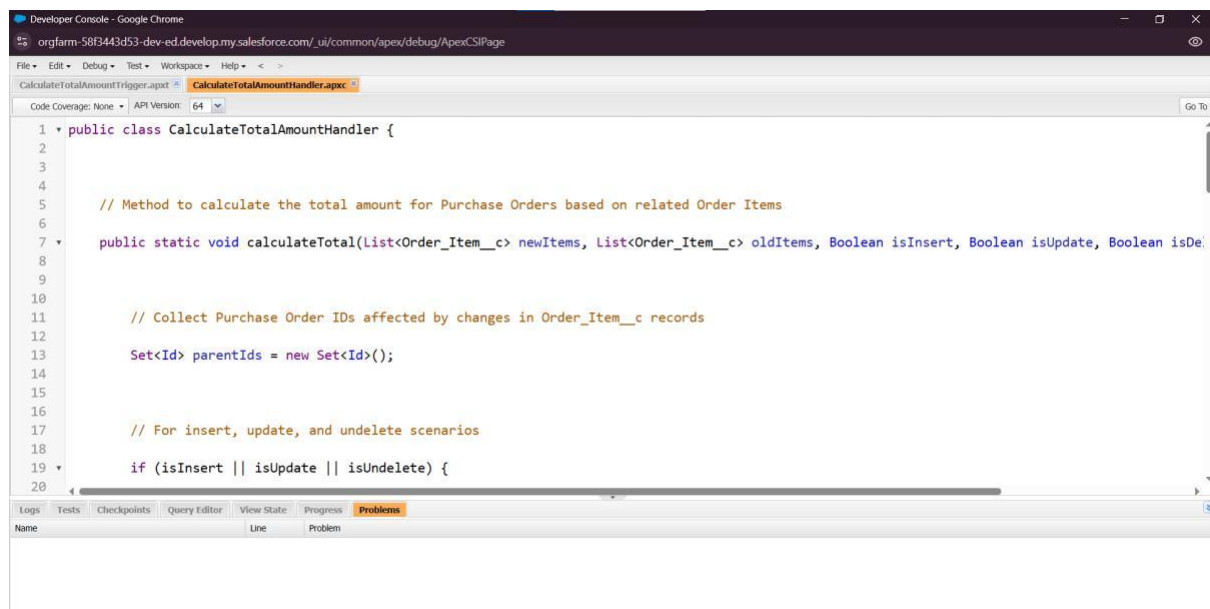
Create a Trigger to Calculate total amount on Order Item.



The screenshot shows the Salesforce Developer Console with the trigger code for `CalculateTotalAmountTrigger`. The trigger is set to fire on the `Order_Item__c` object after insert, update, delete, and undelete operations. It calls the `calculateTotal` method of the `CalculateTotalAmountHandler` class.

```
1 trigger CalculateTotalAmountTrigger on Order_Item__c (after insert, after update, after delete, after undelete) {  
2  
3     // Call the handler class to handle the logic  
4  
5     CalculateTotalAmountHandler.calculateTotal(trigger.new, trigger.old, trigger.isInsert, trigger.isUpdate, trigger.isDelete, trigger.isUndelete);  
6  
7 }
```

Choose Apex Class: Name it as CalculateTotalAmountHandler



The screenshot shows the Salesforce Developer Console with the Apex class code for `CalculateTotalAmountHandler`. The class contains a static method `calculateTotal` that takes a list of new order items, a list of old order items, and boolean flags for insert, update, and delete operations. It initializes a set of parent IDs and includes logic for insert, update, and delete scenarios.

```
1 public class CalculateTotalAmountHandler {  
2  
3  
4  
5     // Method to calculate the total amount for Purchase Orders based on related Order Items  
6  
7     public static void calculateTotal(List<Order_Item__c> newItems, List<Order_Item__c> oldItems, Boolean isInsert, Boolean isUpdate, Boolean isDelete) {  
8  
9  
10  
11         // Collect Purchase Order IDs affected by changes in Order_Item__c records  
12  
13         Set<Id> parentIds = new Set<Id>();  
14  
15  
16  
17         // For insert, update, and undelete scenarios  
18  
19         if (isInsert || isUpdate || isDelete) {  
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Create a Purchase Orders based on Suppliers(Summary) Report

orgfarm-58B3443d53-dev-ed.develop.lightning.force.com/lightning/r/Report/000GK000004qchUAA/view?queryScope=userFolders

Medical Inventory ... Products Purchase Orders Order Items Inventory Transactions Suppliers Reports Dashboards

Report: Purchase Orders
Purchase Orders based on Suppliers

Enable Field Editing Add Chart Edit

Total Records: 5
Total Order Count: 14
Total Total Order Cost: \$26,325.00

Supplier ID	Purchase Order: Purchase Order ID	Order Count	Total Order Cost
Supplier-001 (4)	Purchase-0001 (1)	3	\$2,075.00
	Purchase-0002 (1)	2	\$3,250.00
	Purchase-0003 (1)	3	\$7,000.00
	Purchase-0004 (1)	4	\$9,500.00
Supplier-002 (1)	Purchase-0005 (1)	2	\$4,500.00
Total (5)		14	\$26,325.00

Row Counts: ☒ Detail Rows: ☒ Subtotals: ☐ Grand Total: ☒

Create a Complete Purchase Details Report

orgfarm-58B3443d53-dev-ed.develop.lightning.force.com/lightning/r/Report/000GK000004qg8UAQ/view?queryScope=userFolders

Medical Inventory ... Products Purchase Orders Order Items Inventory Transactions Suppliers Reports Dashboards

Report: Purchase Orders with Order Items and Product ID
Complete Purchase Details Report

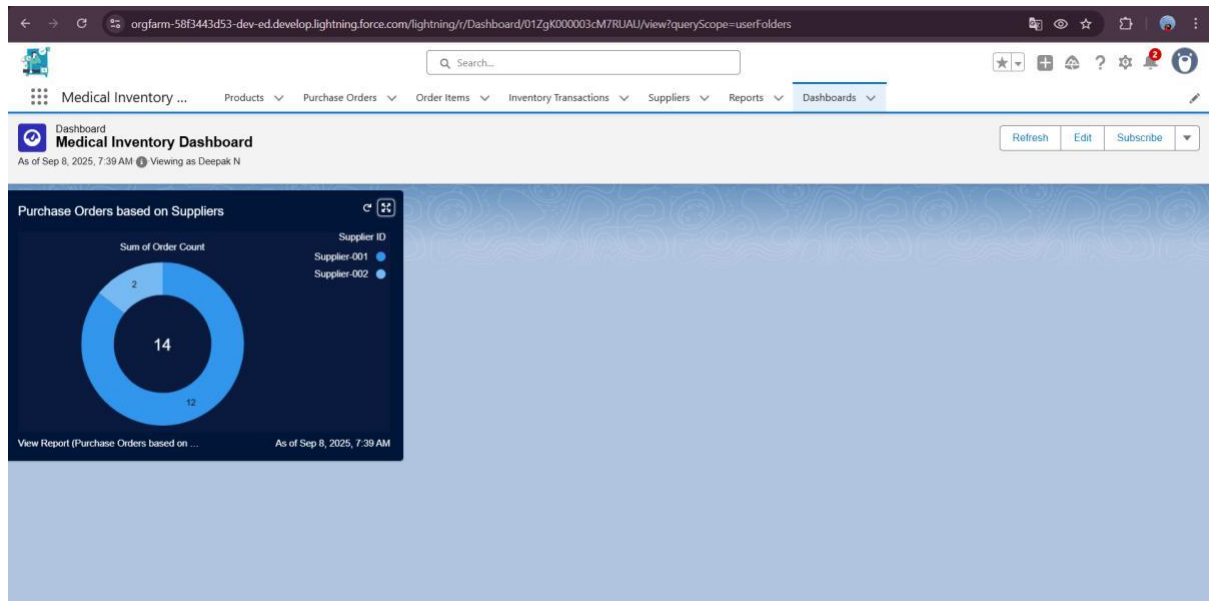
Enable Field Editing Add Chart Edit

Total Records: 14
Total Order Count: 14
Total Quantity Received: 276
Total Amount: \$26,325.00

Supplier ID	Actual Delivery Date	Purchase Order: Purchase Order ID	Product ID: Product ID	Order Count	Product ID: Product Name	Quantity Received	Amount
Supplier-001 (12)	9/10/2025 (4)	Purchase-0004 (4)	Antibiotic Tablets	4	Antibiotic Tablets	40	\$6,000.00
			Paracetamol	4	Paracetamol 500mg	20	\$500.00
			Vitamin C Tablets	4	Vitamin C Tablets	10	\$500.00
			Antacid	4	Antacid	25	\$2,500.00
	Subtotal			4		95	\$9,500.00
				4		95	\$9,500.00
				4			
				4			
	9/11/2025 (8)	Purchase-0001 (3)	Antibiotic Tablets	3	Antibiotic Tablets	10	\$1,500.00
			Paracetamol	3	Paracetamol 500mg	7	\$175.00
			Antacid	3	Antacid	4	\$400.00
				3		21	\$2,075.00
	Subtotal			3		25	\$3,250.00
				3		24	\$3,600.00
				3		56	\$1,400.00
				3			

Row Counts: ☒ Detail Rows: ☒ Subtotals: ☒ Grand Total: ☒

View Dashboard



RESULTS

- Tabs for Product, Supplier, Purchase Order, Inventory. •
- Reports for Expired Products and Supplier Performance.
- Dashboard showing Stock Levels and Purchase Order Summary.
- Trigger execution results (auto-calculated total order amount). •
- Validation Rule error messages (when wrong data is entered).

ADVANTAGES & DISADVANTAGES

Advantages

- Accurate tracking of products and expiry dates.
- Easy management of supplier and purchase orders.
- Reduced manual work with automation (flows and triggers).
- Visual dashboards for quick decision-making.

Disadvantages

- Requires Salesforce knowledge for customization.
- Limited offline functionality.
- Integration with external systems (e.g., hospital management software) not implemented yet.

APPENDIX

Create an Apex Trigger:

```
trigger CalculateTotalAmountTrigger on Order_Item__c (after insert, after update, after
delete, after undelete) {
    // Call the handler class to handle the logic
    CalculateTotalAmountHandler.calculateTotal(trigger.new, trigger.old, trigger.isInsert,
trigger.isUpdate, trigger.isDelete,
trigger.isUndelete); }
```

Create Apex Class:

```
public class CalculateTotalAmountHandler {

    // Method to calculate the total amount for Purchase Orders based on related Order
    Items
    public static void calculateTotal(List<Order_Item__c> newItems, List<Order_Item__c>
    oldItems, Boolean isInsert, Boolean isUpdate, Boolean isDelete, Boolean isUndelete) {

        // Collect Purchase Order IDs affected by changes in Order_Item__c
        records Set<Id> parentIds = new Set<Id>();

        // For insert, update, and undelete scenarios
        if (isInsert || isUpdate || isUndelete) {
            for (Order_Item__c ordItem : newItems) {
                parentIds.add(ordItem.Purchase_Order_Id__c);
            }
        }

        // For update and delete scenarios
        if (isUpdate || isDelete) {
            for (Order_Item__c ordItem : oldItems) {
                parentIds.add(ordItem.Purchase_Order_Id__c);
            }
        }
    }
}
```

```

// Calculate the total amounts for affected Purchase Orders
Map<Id, Decimal> purchaseToUpdateMap = new Map<Id, Decimal>();

if (!parentIds.isEmpty()) {
    // Perform an aggregate query to sum the Amount__c for each Purchase Order
    List<AggregateResult> aggrList = [
        SELECT Purchase_Order_Id__c, SUM(Amount__c)
        totalAmount FROM Order_Item__c
        WHERE Purchase_Order_Id__c IN :parentIds
        GROUP BY Purchase_Order_Id__c
    ];

    // Map the result to Purchase Order IDs
    for (AggregateResult aggr : aggrList) {
        Id purchaseOrderId = (Id)aggr.get('Purchase_Order_Id__c');
        Decimal totalAmount = (Decimal)aggr.get('totalAmount');
        purchaseToUpdateMap.put(purchaseOrderId, totalAmount);
    }

    // Prepare Purchase Order records for update
    List<Purchase_Order__c> purchaseToUpdate = new
List<Purchase_Order__c>();
    for (Id purchaseOrderId : purchaseToUpdateMap.keySet()) {
        Purchase_Order__c purchaseOrder = new Purchase_Order__c(Id =
purchaseOrderId, Total_Order_cost__c = purchaseToUpdateMap.get(purchaseOrderId));
        purchaseToUpdate.add(purchaseOrder);
    }

    // Update Purchase Orders if there are any changes
    if (!purchaseToUpdate.isEmpty()) {
        update purchaseToUpdate;
    }
}
}
}

```

Future Enhancements

- Add **barcode scanning** for products to make stock entry faster.
- Implement **email or SMS alerts** for products nearing expiry.
- Create **mobile-friendly pages** for quick access by staff.
- Add **AI predictions** for stock demand and reordering.
- Integrate with **external hospital systems** for real-time updates.

CONCLUSION

The Medical Inventory Management System successfully streamlines the operations of managing medical supplies using Salesforce. It ensures better accuracy, reduces errors, and improves efficiency in handling suppliers, purchase orders, and products. With features like validation rules, flows, triggers, reports, and dashboards, the project demonstrates the practical use of Salesforce in real-time business scenarios.