

SHIVANI ENGINEERING COLLEGE

**Department of Computer Science and Engineering
(Cyber Security)**

Project Title: Medical Inventory Management System

Platform: Salesforce Developer

Submitted by:

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Project Overview

The **Medical Inventory Management System** is designed to automate and streamline the process of managing medical supplies, purchase orders, stock levels, and supplier details within a healthcare or pharmacy environment. The system ensures accurate tracking of product information, supplier interactions, inventory transactions, and purchase activities — all within a unified Salesforce platform.

This project leverages Salesforce's automation tools such as **Flows, Validation Rules, Triggers, and Apex Classes** to manage product details, monitor purchase activity, and maintain optimal stock levels. By digitizing manual processes, the system improves operational efficiency and minimizes human errors in inventory control.

2. Objective

The main goal of the Medical Inventory Management System is to provide a **centralized and automated platform** for managing medical product data, supplier relationships, and inventory movements.

Business Goals:

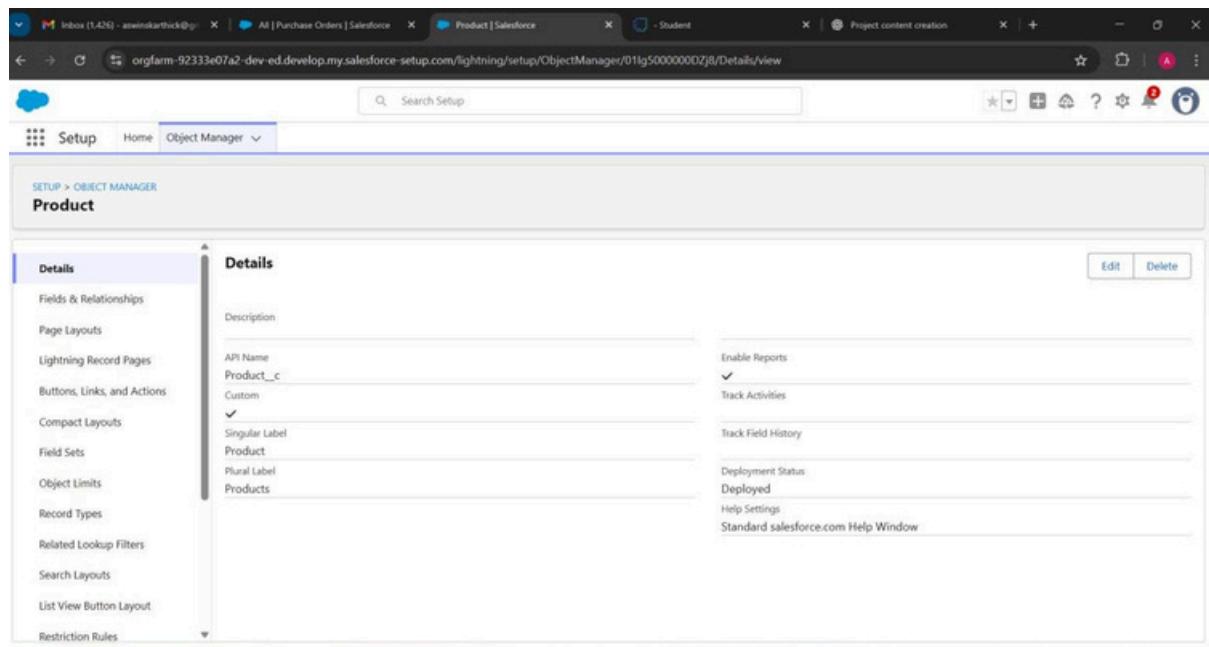
- A. **Automate Inventory Processes:** Create a seamless workflow for tracking purchase orders, supplier details, and product stock updates.
- B. **Optimize Stock Levels:** Prevent overstocking or shortages by maintaining real-time visibility of inventory quantities.
- C. **Improve Supplier Management:** Establish accurate and transparent communication between the purchasing and supplier departments.
- D. **Enhance Decision-Making:** Provide real-time data through reports and dashboards for better forecasting and analysis.
- E. **Reduce Manual Effort:** Use automation, formulas, and triggers to eliminate repetitive tasks and maintain data consistency.

3. Salesforce Key Features and Concepts Utilized

The Medical Inventory Management System uses several Salesforce components and features to efficiently handle the end-to-end medical inventory workflow.

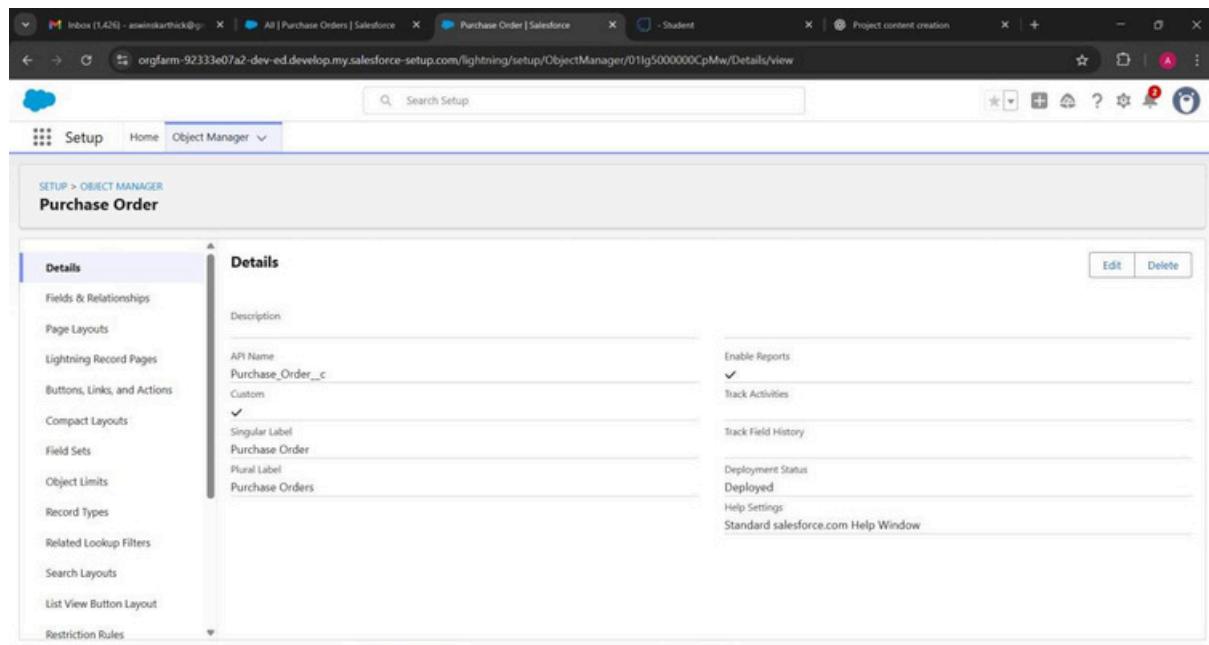
Custom Objects

- 1. Product:** Stores detailed information about each medical item such as product name, description, stock level, and unit price.



The screenshot shows the Salesforce Object Manager interface. The left sidebar lists various configuration options for the 'Product' object, including 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, and Restriction Rules. The main 'Details' pane displays the API Name as 'Product_c' and the Singular Label as 'Product'. On the right, there are sections for Description, Enable Reports (checked), Track Activities, Track Field History, Deployment Status (Deployed), and Help Settings (Standard salesforce.com Help Window). There are also 'Edit' and 'Delete' buttons at the top right of the details pane.

- 2. Purchase Order:** Manages purchase-related information like supplier details, order date, and total order cost.



The screenshot shows the Salesforce Object Manager interface. The left sidebar lists various configuration options for the 'Purchase Order' object, including 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, and Restriction Rules. The main 'Details' pane displays the API Name as 'Purchase_Order_c' and the Singular Label as 'Purchase Order'. On the right, there are sections for Description, Enable Reports (checked), Track Activities, Track Field History, Deployment Status (Deployed), and Help Settings (Standard salesforce.com Help Window). There are also 'Edit' and 'Delete' buttons at the top right of the details pane.

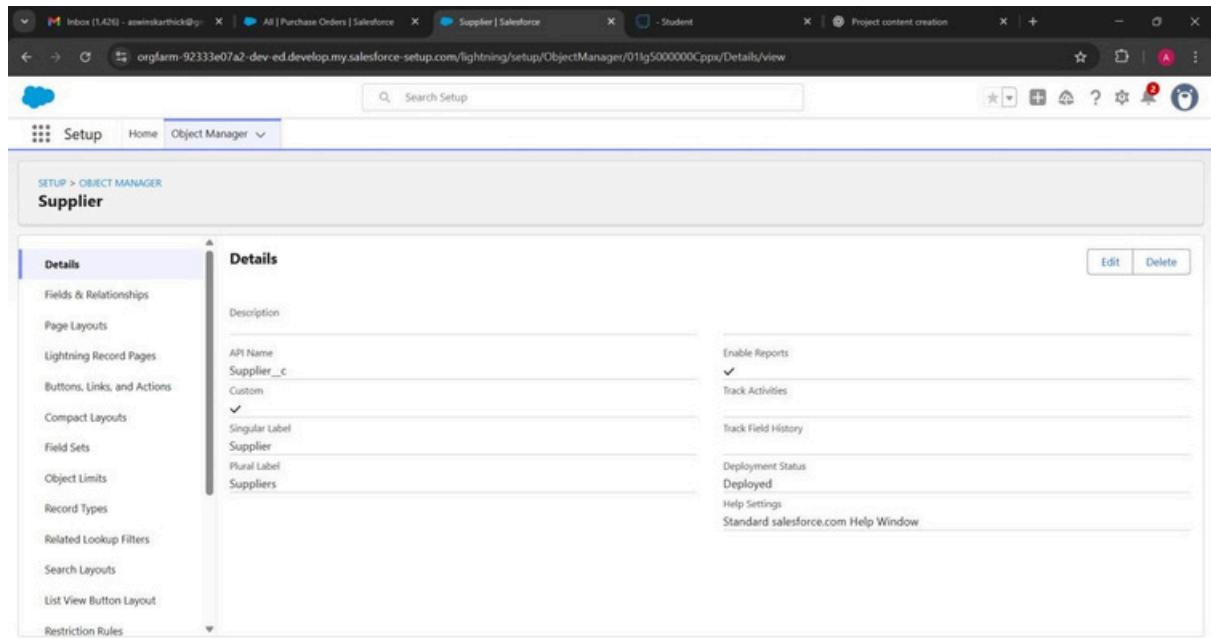
3. Order Item: Tracks individual items purchased within a specific purchase order, including quantity received and price.

The screenshot shows the Salesforce Object Manager interface. The left sidebar lists various 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, and List View Button Layout. The main pane displays the 'Details' section for the 'Order Item' object. The 'API Name' field is set to 'Order_Item__c'. Under the 'Singular Label' section, 'Order Item' is selected. On the right side, there are checkboxes for 'Enable Reports' (checked), 'Track Activities' (checked), 'Track Field History' (unchecked), and 'Deployment Status' (set to 'Deployed'). The 'Help Settings' field is set to 'Standard salesforce.com Help Window'. At the bottom right are 'Edit' and 'Delete' buttons.

4. Inventory Transaction: Records movements of medical products, including receipts, issues, and adjustments.

This screenshot is identical to the one above, showing the Salesforce Object Manager interface for the 'Order Item' object. The left sidebar and main 'Details' section are the same, including the API name 'Order_Item__c', singular label 'Order Item', and various configuration settings like deployment status and help settings. The 'Edit' and 'Delete' buttons are also present at the bottom right.

5. Supplier: Contains supplier information such as name, contact number, and email.



The screenshot shows the Salesforce Object Manager interface for the 'Supplier' object. The left sidebar lists various setup options like Fields & Relationships, Page Layouts, and Buttons. The main 'Details' tab is selected, showing fields such as Description, API Name (Supplier__c), Singular Label (Supplier), and Plural Label (Suppliers). On the right, there are checkboxes for enabling Reports, Activities, and Field History, along with deployment status (Deployed) and help settings. Buttons for Edit and Delete are at the top right.

Relationships

- **Purchase Order → Supplier (Lookup Relationship):**
Links each purchase order to a specific supplier for clear tracking.
- **Order Item → Purchase Order (Master-Detail Relationship):**
Ensures each order item belongs to one purchase order and supports roll-up summary calculations.
- **Inventory Transaction → Product (Lookup Relationship):**
Connects inventory transactions to products for stock tracking.

These relationships ensure accurate data connections and dependency between records.

Tabs: Tabs are created in Salesforce to easily access and manage custom object records. In the Medical Inventory Management project, tabs were created for Products, Purchase Orders, Order Items, Inventory Transactions, and Suppliers. This allows users to quickly view, create, and organize records for each module directly from the Salesforce navigation bar.

The screenshot shows the Salesforce Setup interface under the 'Tabs' section. It lists several types of tabs:

- Custom Object Tabs:**
 - Action: Edit | Del, Label: Inventory Transactions, Tab Style: Scales
 - Action: Edit | Del, Label: Order Items, Tab Style: Box
 - Action: Edit | Del, Label: Products, Tab Style: Stethoscope
 - Action: Edit | Del, Label: Purchase Orders, Tab Style: Form
 - Action: Edit | Del, Label: Supplier objects, Tab Style: Factory
 - Action: Edit | Del, Label: Suppliers, Tab Style: Building
- Web Tabs:** No Web Tabs have been defined.
- Visualforce Tabs:** No Visualforce Tabs have been defined.

Lightning App Development

A **Lightning App** named *Medical Inventory Management* was created through **App Manager** to organize all the custom objects.

Tabs Added:

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

This app provides a single interface for administrators to monitor inventory and purchases efficiently.

The screenshot shows the Lightning App Builder's 'App Details & Branding' configuration page for the 'Medical Inventory Management' app. The left sidebar shows navigation options like App Settings, App Details & Branding (selected), App Options, Utility Items (Desktop Only), Navigation Items, and User Profiles.

App Details & Branding

Give your Lightning app a name and description. Upload an image and choose the highlight color for its navigation bar.

App Details	App Branding
*App Name: <input type="text" value="Medical Inventory Management"/>	Image <input type="file"/> Primary Color Hex Value: #6DF12B
*Developer Name: <input type="text" value="Medical_Inventory_Management"/>	
Description: <input type="text" value="Enter a description.."/>	Org Theme Options: <input type="checkbox"/> Use the app's image and color instead of the org's custom theme

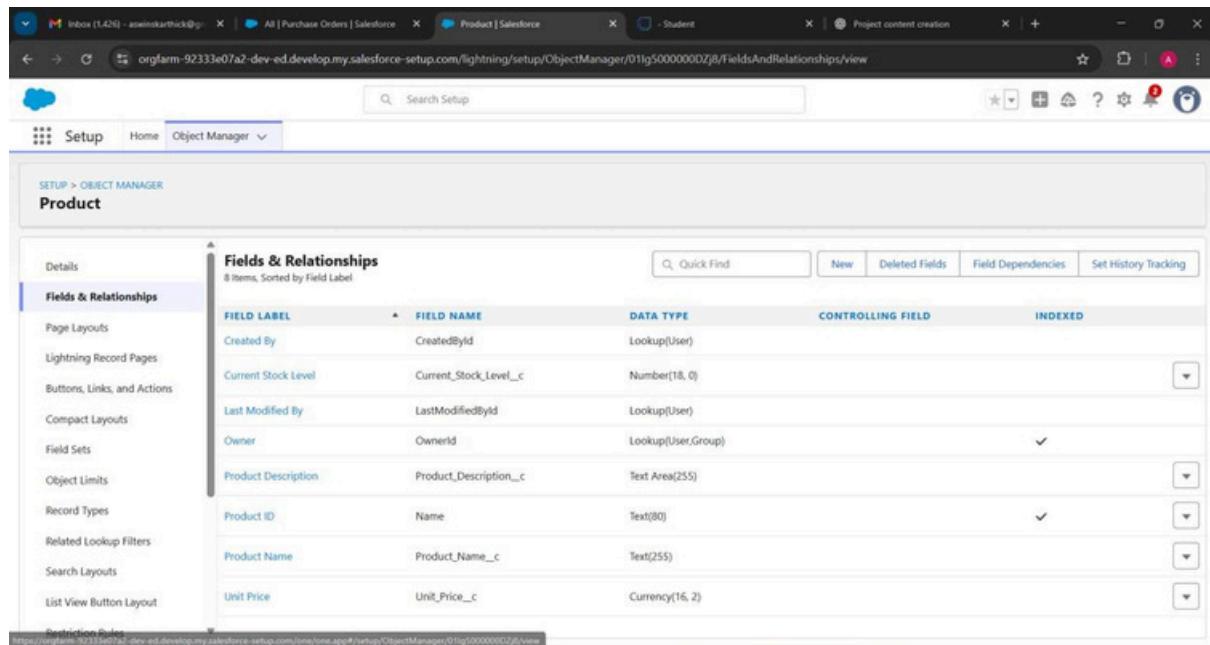
App Launcher Preview

. Field Configurations and Validation Rules

Key fields and formulas were configured in each object to store relevant information accurately.

Product Object

These fields allow administrators to monitor inventory availability, calculate product value, and identify which items need to be reordered. They are directly used in inventory transaction and purchase order calculations.

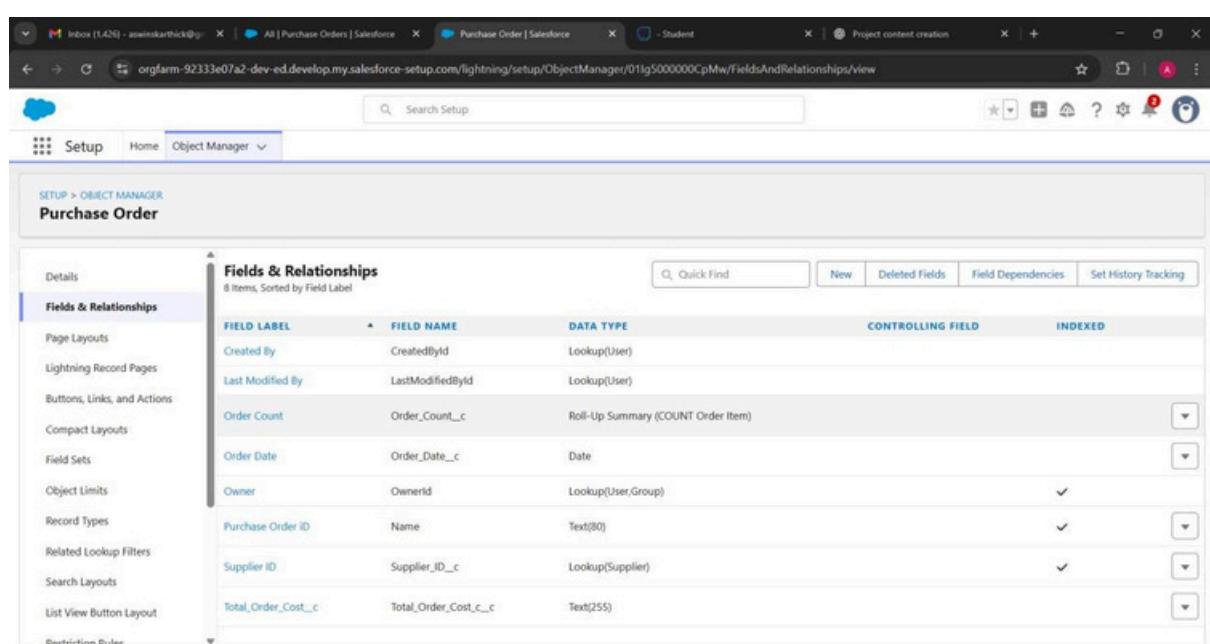


The screenshot shows the Salesforce Object Manager interface for the 'Product' object. The left sidebar lists various setup options like Page Layouts, Lightning Record Pages, and Field Sets. The main content area is titled 'Fields & Relationships' and displays eight fields sorted by field label. Each row includes columns for Field Label, Field Name, Data Type, Controlling Field, and Indexed status. The indexed status for most fields is checked.

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Current Stock Level	Current_Stock_Level_c	Number(18, 0)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		
Product Description	Product_Description__c	Text Area(255)		
Product ID	Name	Text(80)		
Product Name	Product_Name__c	Text(255)		
Unit Price	Unit_Price__c	Currency(16, 2)		

Purchase Order Object

This object acts as the main control center for the purchasing process, helping managers track supplier relationships, delivery timelines, and total purchase costs.



The screenshot shows the Salesforce Object Manager interface for the 'Purchase Order' object. The left sidebar lists various setup options. The main content area is titled 'Fields & Relationships' and displays eight fields sorted by field label. The indexed status for most fields is checked.

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
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__c	Total_Order_Cost__c_c	Text(255)		

Order Item Object

Each order item contributes to the total purchase cost. The data from these fields is aggregated in the **Purchase Order** object to compute total expenditure.

The screenshot shows the Salesforce Setup interface for the 'Object Manager'. The left sidebar lists various setup categories like Details, Fields & Relationships, Page Layouts, etc. The main pane displays the 'Details' section for the 'Order Item' object. It includes fields for Description, API Name (set to 'Order_Item__c'), Singular Label ('Order Item'), Plural Label ('Order Items'), and other settings like Enable Reports, Track Activities, Deployment Status (Deployed), and Help Settings (Standard salesforce.com Help Window). There is also a preview of the object's fields and relationships.

Inventory Transaction Object

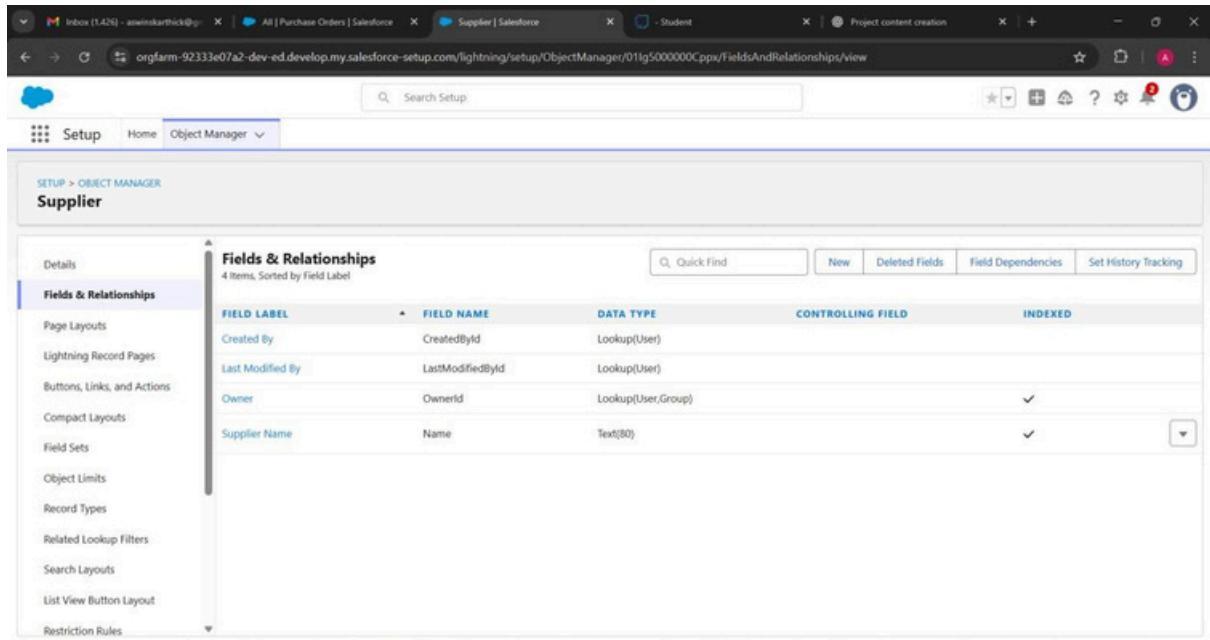
These fields enable full traceability of stock movements, allowing the admin to track whether items were added, issued, or adjusted, ensuring stock integrity.

The screenshot shows the Salesforce Setup interface for the 'Object Manager'. The left sidebar lists various setup categories like Details, Fields & Relationships, Page Layouts, etc. The main pane displays the 'Fields & Relationships' section for the 'Inventory Transaction' object. It shows a table with columns for FIELD LABEL, FIELD NAME, DATA TYPE, CONTROLLING FIELD, and INDEXED. The table contains entries for Created By (CreatedBy), Inventory Transaction ID (Name), Last Modified By (LastModifiedBy), Owner (OwnerId), Purchase Order ID (Purchase_Order_ID__c), and Transaction Type (Transaction_Type__c).

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedBy	Lookup(User)		
Inventory Transaction ID	Name	Text(80)		
Last Modified By	LastModifiedBy	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		
Purchase Order ID	Purchase_Order_ID__c	Lookup(Purchase Order)		
Transaction Type	Transaction_Type__c	Picklist		

Supplier Object

Maintains an up-to-date supplier directory that supports lookup relationships with purchase orders. These fields enable automatic communication and accurate supplierbased reporting.



The screenshot shows the Salesforce Object Manager interface for the 'Supplier' object. The left sidebar lists various setup options like Details, Fields & Relationships, Page Layouts, and Lightning Record Pages. The main content area is titled 'Fields & Relationships' and displays four items sorted by Field Label. A table provides details for each field:

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedById	Lookup(User)		
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Supplier Name	Name	Text(80)		✓

Page Layouts:

Editing **Page Layouts** in Salesforce helps organize how fields, sections, and related lists appear on record pages for better clarity and data entry.

In the **Medical Inventory Management** project, page layouts were customized for **Product**, **Purchase Order**, **Order Item**, **Inventory Transaction**, and **Supplier** objects. Fields such as **Order Date**, **Total Order Cost**, **Supplier ID**, **Product Name**, and **Unit Price** were properly arranged for a clean and structured view.

Some important fields like **Order Date** were marked as *Required*, while calculated fields such as **Total Order Cost** were set as *Read-Only* to maintain data accuracy and prevent manual modification.

These layout edits make data management easier and improve user experience across all modules.

The screenshot shows the Salesforce Setup interface for the 'Supplier' object. The left sidebar lists various configuration options like Details, Fields & Relationships, Page Layouts, Lightning Record Pages, etc. The 'Page Layouts' option is selected. The main area displays the 'Supplier Detail' page layout configuration. It includes a 'Fields' section with a 'Quick Find' bar and a 'Layout Properties' tab. The layout itself shows fields such as Supplier Name, Contact Number, Email, Address, Rating, and Phone Number, each with sample values. Buttons for Edit, Delete, Close, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels are at the bottom.

The screenshot shows the Salesforce Setup interface for the 'Transaction' object. The left sidebar lists various configuration options like Details, Fields & Relationships, Page Layouts, Lightning Record Pages, etc. The 'Page Layouts' option is selected. The main area displays the 'Transaction Detail' page layout configuration. It includes a 'Fields' section with a 'Quick Find' bar and a 'Layout Properties' tab. The layout shows fields such as Transaction ID, Product, Quantity, Type, Transaction Date, and Purchase Order, each with sample values. Buttons for Edit, Delete, Close, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels are at the bottom.

Profiles and Permission Sets

- Profiles Created

The screenshot shows the Salesforce Object Manager interface for the Order Item object. The left sidebar lists various settings like Details, Fields & Relationships, Page Layouts (which is 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, and Record Rules.

The main area displays the Order Item page layout configuration. At the top, there are buttons for Save, Quick Save, Preview As..., Cancel, Undo, Redo, and Layout Properties. A Quick Find field is present. The layout itself contains sections for Fields, Buttons, Quick Actions, Mobile & Lightning Actions, Expanded Lookups, Related Lists, and Report Charts. The Fields section is expanded, showing fields like Order Item ID (selected), Section, Blank Space, Created By, and Last Modified By.

A note below the layout states: "Actions in this section are predefined by Salesforce. You can override the predefined actions to set a customized list of actions on Lightning Experience and mobile app pages that use this layout. If you customize the actions in the Quick Actions in the Salesforce Classic Publisher section, and have saved the layout, then this section inherits that set of actions by default when you click to override."

The Order Item Detail section includes standard buttons (Edit, Delete, Close, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, Edit Labels) and a Custom Buttons section. Below this are sections for Information (Header visible on edit only), System Information (Header visible on edit only), and Custom Links (Header visible on edit only).

The screenshot shows the Salesforce Setup interface with the 'Profiles' tab selected. The 'Inventory Manager' profile is displayed. The profile details are as follows:

- Name:** Inventory Manager
- User License:** Salesforce
- Description:** (empty)
- Created By:** Aawn.kadlick, 10/29/2025, 2:17 AM
- Modified By:** Aawn.kadlick, 10/29/2025, 2:18 AM

Page Layouts

Standard Object Layouts	Global	Location Group
Email Application	Global Layout [View Assignment]	Location Group Layout [View Assignment]
Home Page Layout	Not Assigned [View Assignment]	Location Group Assignment Layout [View Assignment]
Account	Home Page Default [View Assignment]	Macro [View Assignment]
Alternative Payment Method	Account Layout [View Assignment]	Object Milestone [View Assignment]
	Alternative Payment Method Layout	Operating Hours [View Assignment]

- o **Purchase Manager**—Access to purchase order and supplier objects.

The screenshot shows the Salesforce Setup interface with the 'Profiles' tab selected. The 'Purchase Manager' profile is displayed. The profile details are as follows:

- Name:** Purchase Manager
- User License:** Analytics Cloud Integration User
- Description:** (empty)
- Created By:** Aawn.kadlick, 11/2/2025, 2:32 AM
- Modified By:** Aawn.kadlick, 11/2/2025, 2:33 AM

Page Layouts

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

- **Permission Set:**

Purchase Manager Create Access — Allows creation of Order Items and visibility of related records.

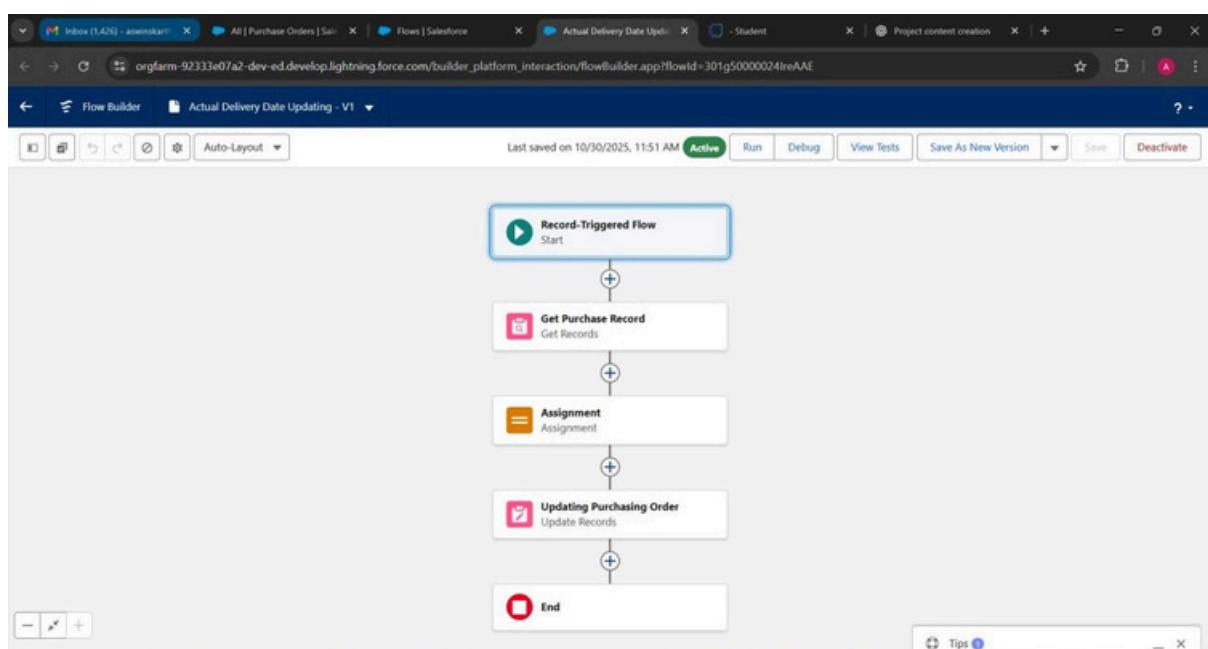
The screenshot shows the Salesforce Setup interface with the 'Permission Sets' page selected. The sidebar on the left is collapsed, and the main area displays a table of permission sets. The table has columns for Action, Permission Set Name, Description, and License. One row is highlighted, showing 'Clone' for the action, 'Purchase Manager' for the permission set name, 'Access the Core A... Purchase Manager...' for the description, and 'Cloud Integration User' for the license.

. Automations and Flows

- Flow – Actual Delivery Date Automation:**

A Record-Triggered Flow automatically updates the *Actual Delivery Date* field to be 3 days after the *Order Date*.

This ensures delivery tracking happens without manual updates.



- Formula Fields:**

In the **Order Item** object, an *Amount* formula field calculates:

`Quantity_Received__c * Unit_Price__c`

Label	API NAME	PRIMARY	MODIFIED BY	LAST MODIFIED
Product Compact Layout	Product_Compact_Layout		Aswin karthick	10/29/2025, 2:08 AM
System Default	SYSTEM	✓		

Apex Trigger and Handler

An **Apex Trigger and Handler Class** were created to automatically calculate the *Total Order Cost* whenever Order Items are inserted, updated, or deleted.

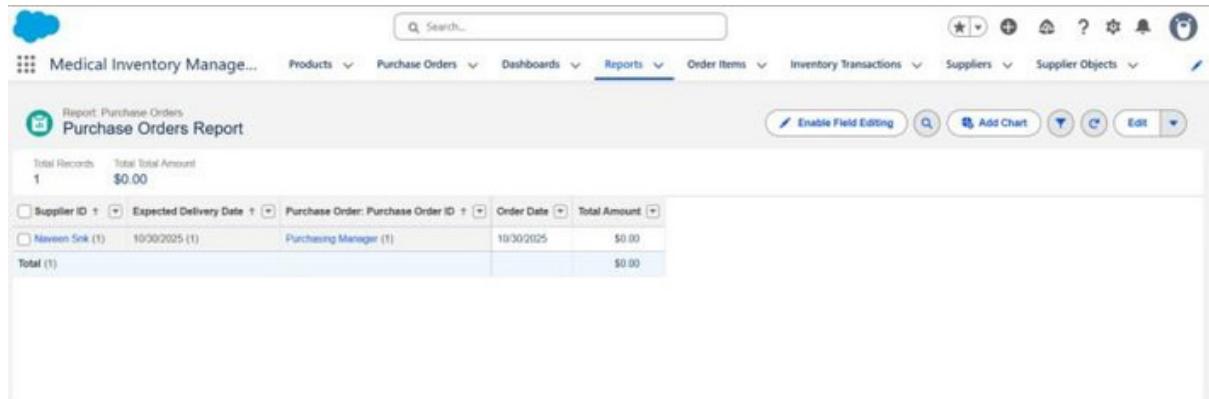
```
trigger CalculateTotalAmountTrigger on Order_Item__c (after insert, after update, after delete, after undelete) {
    // Call the handler class to handle the logic
    CalculateTotalAmountHandler.calculateTotal(Trigger.new, Trigger.old, Trigger.isInsert, Trigger.isUpdate, Trigger.isDelete, Trigger.isUn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

Step 4:
i) In the Developer Console window, go to the top menu and click on "File".
ii) Select New: From the dropdown menu under "File", select "New".
iii) Choose Apex Class: Name it as CalculateTotalAmountHandler
```

Reports:

1. Purchase Orders based on Suppliers

A summary report grouping records by Supplier ID and Purchase Order ID, displaying Order Count and Total Order Cost.



The screenshot shows a report titled "Purchase Orders Report" with the following details:

Total Records	Total Total Amount
1	\$0.00

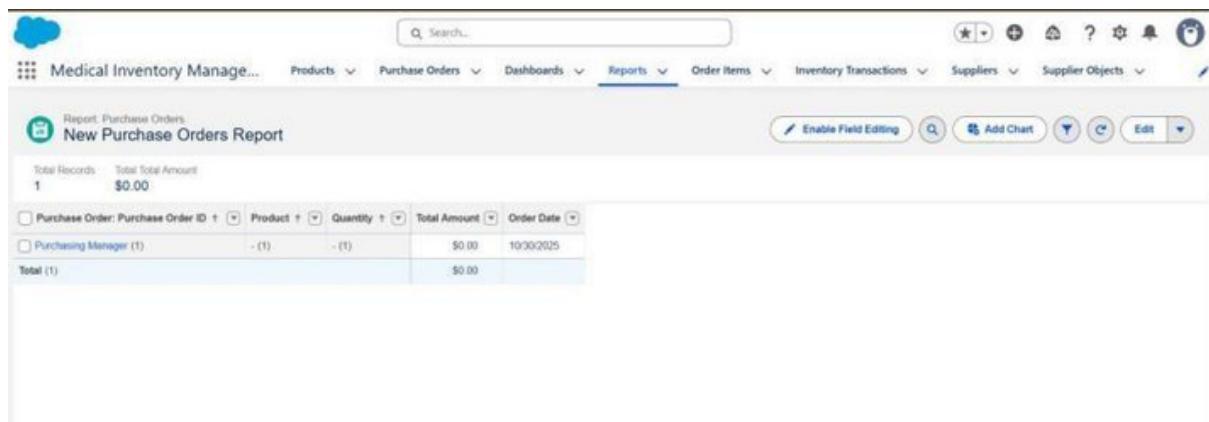
Below the table, there is a search/filter section with columns for Supplier ID, Expected Delivery Date, Purchase Order ID, Order Date, and Total Amount. A single record is listed:

Supplier ID	Expected Delivery Date	Purchase Order ID	Order Date	Total Amount
Naveen Sekh (1)	10/30/2025 (1)	Purchasing Manager (1)	10/30/2025	\$0.00

A summary row at the bottom shows "Total (1)" with a value of "\$0.00".

2. Complete Purchase Details Report

A detailed report combining Purchase Orders, Order Items, and Products with grouped columns for Supplier, Product, Quantity, and Amount.



The screenshot shows a report titled "New Purchase Orders Report" with the following details:

Total Records	Total Total Amount
1	\$0.00

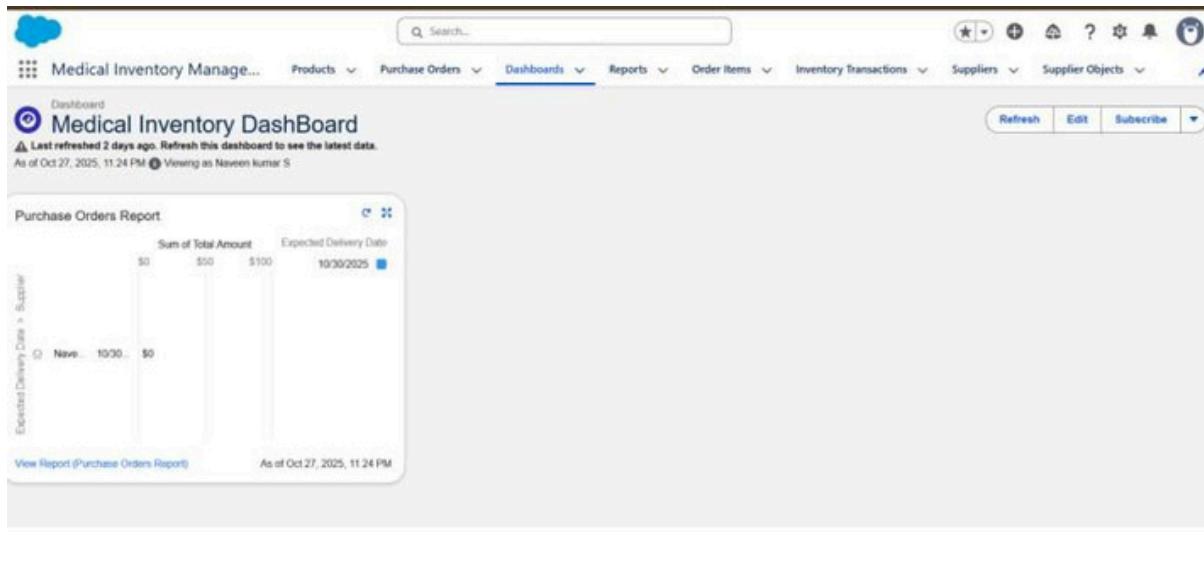
Below the table, there is a search/filter section with columns for Purchase Order ID, Product, Quantity, Total Amount, and Order Date. A single record is listed:

Purchase Order ID	Product	Quantity	Total Amount	Order Date
Purchasing Manager (1)	- (1)	- (1)	\$0.00	10/30/2025

A summary row at the bottom shows "Total (1)" with a value of "\$0.00".

Dashboard:

A dashboard named *Medical Inventory Dashboard* visualizes purchase data, supplier performance, and total order cost using charts and tables derived from reports.



11. Key Scenarios Addressed by Salesforce

1. Inventory Accuracy:

Automates tracking of stock levels and transactions to prevent shortages.

2. Supplier Management:

Centralizes supplier data with email and phone contact integration.

3. Purchase Monitoring:

Enables managers to view real-time order progress through reports and dashboards.

4. Automated Calculations:

Formula fields and triggers keep cost data updated automatically.

5. Role-Based Access:

Profiles and permission sets control which users can create or edit records.

6. Data Validation:

Validation rules prevent incorrect delivery date entries and ensure reliable data.

12. Conclusion

The **Medical Inventory Management System** successfully automates the core functions of a medical procurement and inventory process using Salesforce.

