

MEDICAL INVENTORY MANAGEMENT

COLLEGE NAME: GOVERNMENT ARTS AND SCIENCE COLLEGE, GUDALUR

COLLEGE CODE:bru4w

TEAM ID: NM2025TMID21964

TEAM MEMBERS

TEAM LEADERNAME: KIRAN

EMAIL: kiran02422@gmail.com

TEAM MEMBER:YUVAN SHANKAR . S

EMAIL: yuvanyuvan965@gmail.com

TEAM MEMBER:ADHISHA . S

EMAIL: adhiadhisha27@gmail.com

TEAM MEMBER:MOHAMMED FARHAN . S

EMAIL: soonuuh48@gmail.com

INTRODUCTION

PROJECT OVERVIEW:

Medical Inventory Management is a critical aspect of healthcare operations, focusing on the systematic control of medicines, consumables, and medical equipment within hospitals and clinics. Inefficient inventory practices can lead to shortages, wastage, increased operational costs, and risks to patient safety.

This project proposes a structured inventory management system designed to streamline stock monitoring, automate replenishment processes, and integrate supplier coordination. The system leverages database management, real-time tracking, and demand forecasting to ensure optimal utilization of resources. By implementing such a solution, healthcare institutions can improve service quality, enhance operational efficiency, and ensure the timely availability of essential medical supplies.

Features such as automated stock alerts, expiry date monitoring, supplier integration, and demand forecasting help prevent wastage while improving resource allocation. By adopting this system, healthcare organizations can enhance patient care, maintain compliance with medical regulations, and achieve significant cost savings through optimized inventory control.

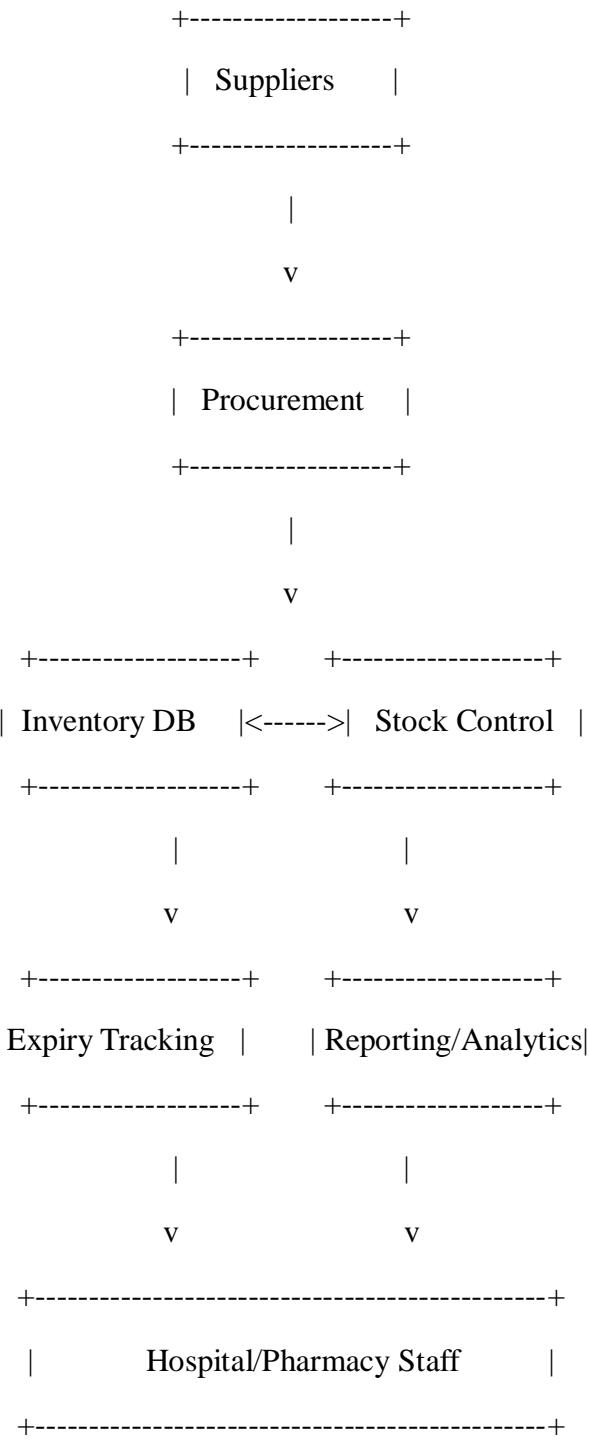
OBJECTIVES:

- **Ensure Uninterrupted Availability of Medical Supplies.**
To maintain continuous availability of essential medicines, surgical tools, and other healthcare supplies, avoiding stock-outs that can affect patient care.
- **Optimize Inventory Levels.**
To prevent overstocking or understocking by maintaining the optimal quantity of each item based on usage trends and shelf life.
- **Improve Cost Efficiency**
To reduce unnecessary spending through bulk purchasing, supplier negotiations, and minimizing emergency procurements due to poor inventory planning.
- **Track and Monitor Inventory in Real-Time**
To implement systems (like barcode/RFID or inventory software) that provide real-time updates, allowing accurate tracking of stock movement and usage.
- **Enhance Patient Safety**
To ensure only safe, valid, and approved medications and equipment are in use by monitoring expiry dates, batch numbers, and recalls

➤ **Streamline Procurement Processes**

To automate and optimize the ordering process based on consumption rates, supplier performance, and lead times.

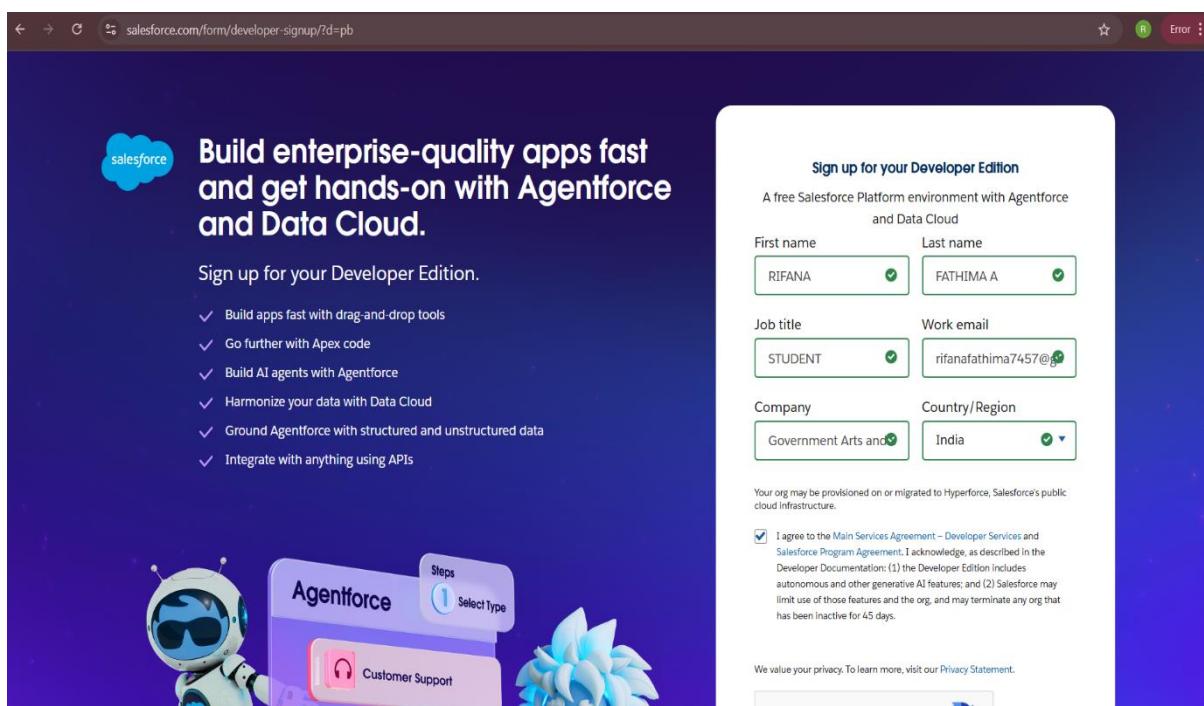
DIAGRAMMATIC FLOW OF MEDICAL INVENTORY:



DEVELOPMENT PHASE:

Creating Developer Account:

By using this URL:<https://www.salesforce.com/form/developer-signup/?d=pb>



Here we created our developer account on salesforce and then we started to create our project.

CREATING CUSTOM OBJECTS:

1. PRODUCT

2. F
U
E
C
E
A
S
E

The screenshot shows the Salesforce Object Manager interface for the 'Product' object. The left sidebar lists various configuration tabs: 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 'Details' tab is selected. The 'Fields & Relationships' section shows the API Name 'Product__c' and a 'Custom' checkbox checked. The 'Page Layouts' section shows the Singular Label 'Product' and Plural Label 'Products'. The 'Buttons, Links, and Actions' section shows the 'Custom' checkbox checked. The 'Compact Layouts' section shows the Singular Label 'Product' and Plural Label 'Products'. The 'Field Sets' section shows the 'Custom' checkbox checked. The 'Object Limits' section shows the 'Custom' checkbox checked. The 'Record Types' section shows the 'Custom' checkbox checked. The 'Related Lookup Filters' section shows the 'Custom' checkbox checked. The 'Search Layouts' section shows the 'Custom' checkbox checked. The 'List View Button Layout' section shows the 'Custom' checkbox checked. The 'Restriction Rules' section shows the 'Custom' checkbox checked. The 'Scoping Rules' section shows the 'Custom' checkbox checked. On the right, there are sections for 'Description', 'Enable Reports' (checked), 'Track Activities' (checked), 'Track Field History', 'Deployment Status' (Deployed), 'Help Settings', and 'Standard salesforce.com Help Window'. At the bottom right are 'Edit' and 'Delete' buttons.

ORDER

The screenshot shows the Salesforce Object Manager interface for the 'Purchase Order' object. The left sidebar lists various configuration tabs: 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 'Details' tab is selected. The 'Fields & Relationships' section shows the API Name 'Purchase_Order__c' and a 'Custom' checkbox checked. The 'Page Layouts' section shows the Singular Label 'Purchase Order' and Plural Label 'Purchase Orders'. The 'Buttons, Links, and Actions' section shows the 'Custom' checkbox checked. The 'Compact Layouts' section shows the Singular Label 'Purchase Order' and Plural Label 'Purchase Orders'. The 'Field Sets' section shows the 'Custom' checkbox checked. The 'Object Limits' section shows the 'Custom' checkbox checked. The 'Record Types' section shows the 'Custom' checkbox checked. The 'Related Lookup Filters' section shows the 'Custom' checkbox checked. The 'Search Layouts' section shows the 'Custom' checkbox checked. The 'List View Button Layout' section shows the 'Custom' checkbox checked. The 'Restriction Rules' section shows the 'Custom' checkbox checked. The 'Scoping Rules' section shows the 'Custom' checkbox checked. On the right, there are sections for 'Description', 'Enable Reports' (checked), 'Track Activities', 'Track Field History', 'Deployment Status' (Deployed), 'Help Settings', and 'Standard salesforce.com Help Window'. At the bottom right are 'Edit' and 'Delete' buttons.

3. ORDER ITEM

4.

The screenshot shows the Salesforce Object Manager interface. The left sidebar lists various configuration options under 'Details'. The main 'Details' section displays the following information for the 'Order Item' object:

Field	Value
Description	[Empty]
API Name	Order_Item__c
Custom	✓
Singular Label	Order Item
Plural Label	Order Items
Enable Reports	✓
Track Activities	[Empty]
Track Field History	[Empty]
Deployment Status	Deployed
Help Settings	Standard salesforce.com Help Window

At the top right, there are 'Edit' and 'Delete' buttons.

NSACTION

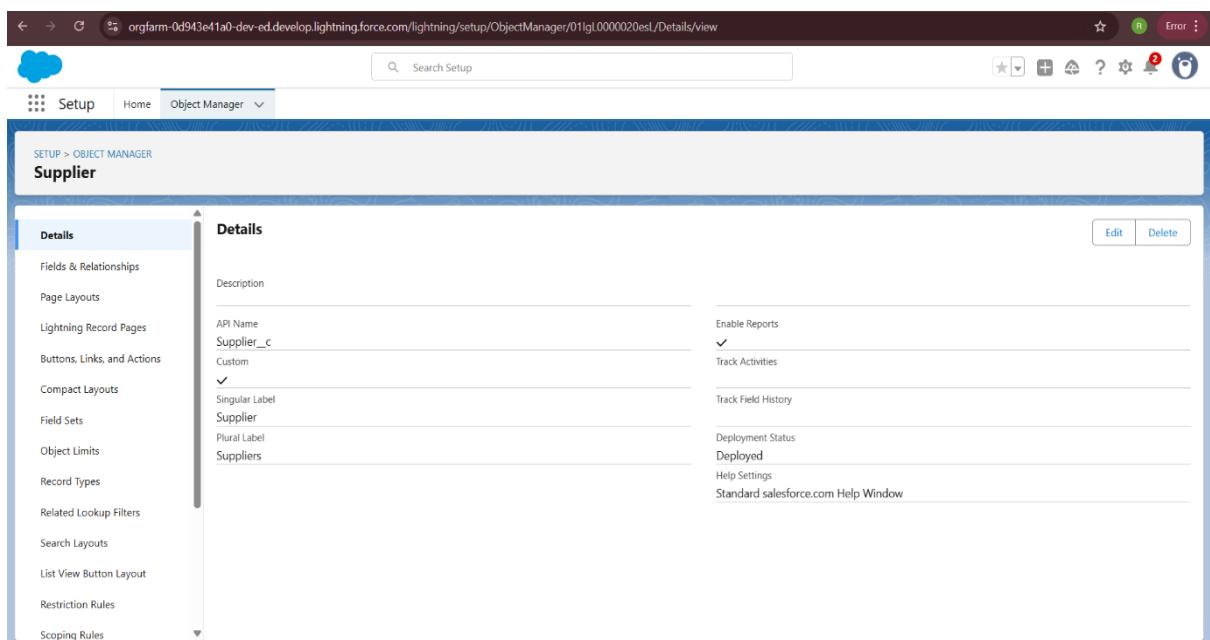
5.

The screenshot shows the Salesforce Object Manager interface. The left sidebar lists various configuration options under 'Details'. The main 'Details' section displays the following information for the 'Inventory Transaction' object:

Field	Value
Description	[Empty]
API Name	Inventory_Transaction__c
Custom	✓
Singular Label	Inventory Transaction
Plural Label	Inventory Transactions
Enable Reports	✓
Track Activities	[Empty]
Track Field History	[Empty]
Deployment Status	Deployed
Help Settings	Standard salesforce.com Help Window

At the top right, there are 'Edit' and 'Delete' buttons.

5. SUPPLIER



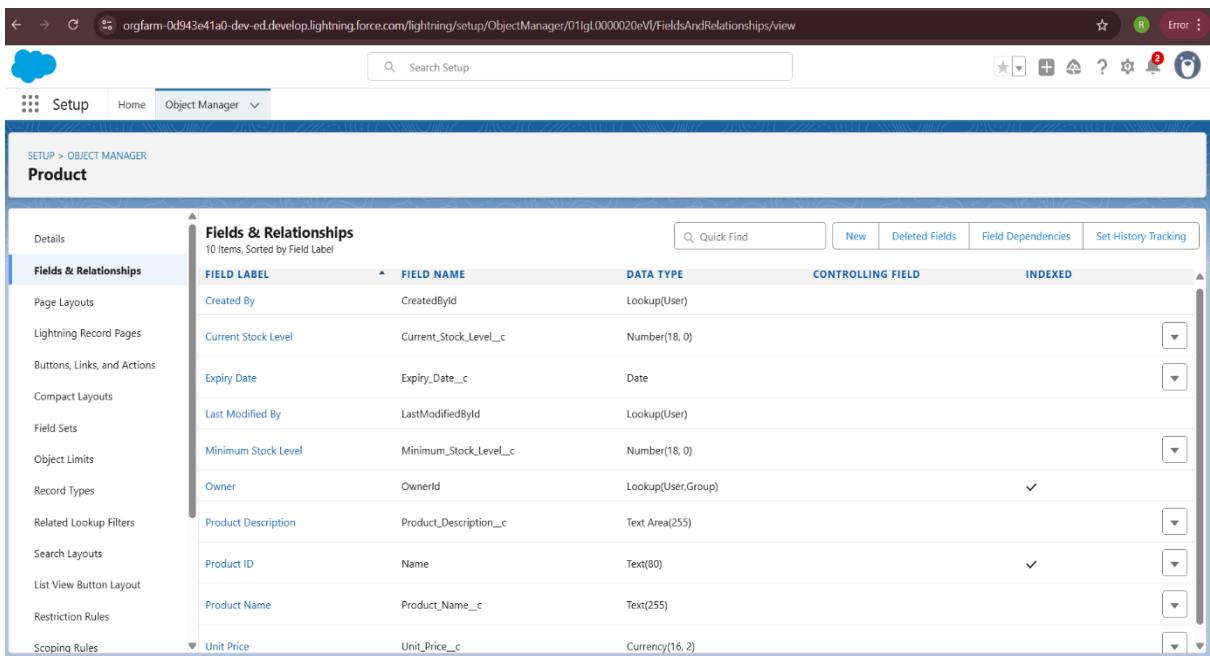
The screenshot shows the Salesforce Object Manager interface for the 'Supplier' object. The left sidebar lists various configuration options: Details, Fields & Relationships, Page Layouts, Lightning Record Pages, Buttons, Links, and Actions, Compact Layouts, Field Sets, Object Limits, Record Types, Related Lookup Filters, Search Layouts, List View Button Layout, Restriction Rules, and Scoping Rules. The main 'Details' tab is selected, showing the following fields:

Description	Enable Reports
API Name Supplier_c	✓
Custom	Track Activities
Singular Label Supplier	Track Field History
Plural Label Suppliers	Deployment Status Deployed Help Settings Standard salesforce.com Help Window

At the bottom right of the details tab are 'Edit' and 'Delete' buttons.

CONFIGURED FIELD AND RELATIONSHIPS:

FOR PRODUCTS:



The screenshot shows the Salesforce Object Manager interface for the 'Product' object. The left sidebar lists 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 'Fields & Relationships' tab is selected, displaying a table of fields:

Fields & Relationships 10 Items, Sorted by Field Label				
FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Created By	CreatedBy	Lookup(User)		
Current Stock Level	Current_Stock_Level_c	Number(18, 0)		
Expiry Date	Expiry_Date_c	Date		
Last Modified By	LastModifiedBy	Lookup(User)		
Minimum Stock Level	Minimum_Stock_Level_c	Number(18, 0)		
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)		

At the top of the table are buttons for Quick Find, New, Deleted Fields, Field Dependencies, and Set History Tracking.

FOR PURCHASE ORDERS:

The screenshot shows the Salesforce Object Manager interface for the Purchase Order 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 10 items sorted by Field Label. The table columns are FIELD LABEL, FIELD NAME, DATA TYPE, CONTROLLING FIELD, and INDEXED.

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Actual Delivery Date	Actual_Delivery_Date_c	Date		
Created By	CreatedBy	Lookup(User)		
Expected Delivery Date	Expected_Delivery_Date_c	Date		
Last Modified By	LastModifiedBy	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)		

The screenshot shows the Salesforce Object Manager interface for the Order Item object. The left sidebar lists various setup options. The main content area is titled 'Fields & Relationships' and displays 9 items sorted by Field Label. The table columns are FIELD LABEL, FIELD NAME, DATA TYPE, CONTROLLING FIELD, and INDEXED.

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Amount	Amount_c	Formula (Currency)		
Created By	CreatedBy	Lookup(User)		
Last Modified By	LastModifiedBy	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)		
Unit Price	Unit_Price_c	Formula (Currency)		

FOR ORDER ITEMS:

FOR INVENTORY TRANSACTIONS:

The screenshot shows the Salesforce Object Manager interface for the 'Inventory Transaction' object. The left sidebar lists various setup categories like Page Layouts, Lightning Record Pages, and Field Sets. The main content area displays the 'Fields & Relationships' section with 8 items, sorted by Field Label. The table includes columns for Field Label, Field Name, Data Type, Controlling Field, and Indexed status.

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)		✓
Total Order Cost	Total_Order_Cost_c	Formula (Currency)		
Transaction Date	Transaction_Date_c	Date		
Transaction Type	Transaction_Type_c	Picklist		

FOR SUPPLIER:

The screenshot shows the Salesforce Object Manager interface for the 'Supplier' object. The left sidebar lists various setup categories. The main content area displays the 'Fields & Relationships' section with 9 items, sorted by Field Label. The table includes columns for Field Label, Field Name, Data Type, Controlling Field, and Indexed status.

FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Address	Address_c	Text Area(255)		
Contact Person	Contact_Person_c	Text(255)		
Created By	CreatedBy	Lookup(User)		
Email	Email_c	Email		
Last Modified By	LastModifiedBy	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Phone Number	Phone_Number_c	Phone		
Supplier ID	Name	Text(80)		✓
Supplier Name	Supplier_Name_c	Text(255)		

DESIGNED A LIGHTNING APP NAMED MEDICAL INVENTORY MANAGEMENT WITH APPLICABLE TABS.

The screenshot shows the 'App Details & Branding' tab in the Lightning App Builder. On the left, a sidebar lists 'App Settings' with 'App Details & Branding' selected. The main area contains fields for 'App Name' (Medical Inventory Management), 'Developer Name' (Medical_Inventory_Management), and a 'Description' placeholder. To the right, there's a 'App Branding' section with an 'Image' field containing a small thumbnail of a medical inventory icon, a 'Primary Color Hex Value' field (#0070D2), and an 'Org Theme Options' checkbox. Below this is an 'App Launcher Preview' section showing a card with the app's name and icon.

The screenshot shows the 'Navigation Items' tab in the Lightning App Builder. The sidebar has 'App Settings' selected. The main area displays a 'Navigation Items' section with a note about personalizing navigation. It shows two columns: 'Available Items' on the left and 'Selected Items' on the right. The 'Available Items' list includes various Salesforce items like Accounts, Activation Targets, Activations, All Sites, etc. The 'Selected Items' list contains 'Products', 'Purchase Orders', 'Order Items', 'Inventory Transactions', 'Suppliers', 'Reports', and 'Dashboards'. Navigation arrows between the columns allow items to be moved.

The screenshot shows the 'User Profiles' section of the Lightning App Builder. On the left, a sidebar lists 'App Settings' options: App Details & Branding, App Options, Utility Items (Desktop Only), Navigation Items, and User Profiles (which is selected and highlighted in blue). The main content area is titled 'User Profiles' and contains the sub-instruction: 'Choose the user profiles that can access this app.' Below this is a 'Available Profiles' list containing various user profile names, each with a small preview icon. A search bar at the top of this list says 'Type to filter list...'. To the right of the available profiles is a 'Selected Profiles' list, which currently contains three profiles: 'System Administrator', 'Inventory Manager', and 'Purchase Manager'. Between these two lists are two vertical arrows: a right-pointing arrow between the available and selected lists, and a left-pointing arrow below the selected list.

HOW INFORMATION IS ORGANIZED AND SHOWN ON A CUSTOM OBJECT'S PAGE

PAGE LAYOUT FOR PRODUCT OBJECT

The screenshot shows the 'Object Manager' setup page for the 'Product' object. The left sidebar has a tree view with nodes like 'Details', 'Fields & Relationships', 'Page Layouts' (which is selected and highlighted in blue), 'Lightning Record Pages', 'Buttons, Links, and Actions', etc. The main content area is titled 'Product' and contains several sections: 'Fields' (with a 'Quick Find' field name search bar), 'Layout Properties' (with tabs for 'Save', 'Quick Save', 'Preview As...', 'Cancel', 'Undo', 'Redo'), and a 'Product Detail' section. The 'Product Detail' section includes a table of fields: Expiry Date, Last Modified By, Product Description, Blank Space, Minimum Stock Level, Product ID, Created By, Product Name, Current Stock Level, Owner, and Unit Price. Below this is a 'Standard Buttons' row with 'Edit', 'Delete', 'Clone', 'Change Owner', 'Change Record Type', 'Printable View', 'Sharing', 'Sharing Hierarchy', and 'Edit Labels' buttons. Further down are sections for 'Information', 'System Information', and 'Custom Links'. At the bottom, there's a note about mobile compatibility: 'Mobile Cards / Salesforce mobile only'.

PAGE LAYOUT FOR PURCHASE ORDER OBJECT

The screenshot shows the Salesforce Setup interface for the Purchase Order object. The left sidebar lists various configuration options under 'Page Layouts'. The main area displays the 'Purchase Order Detail' page layout. At the top, there's a 'Fields' section with a 'Quick Find' field and a table showing fields like 'Section', 'Blank Space', 'Expected Delivery...', 'Owner', etc. Below this is a 'Purchase Order Detail' section containing fields for Purchase Order ID, Supplier ID, Order Date, Actual Delivery Date, Order Count, Total Order Cost, and Owner. Standard buttons for Edit, Delete, Clone, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels are available. The bottom of the layout includes sections for Information, System Information, and Custom Links.

PAGE LAYOUT FOR ORDER ITEM OBJECT

The screenshot shows the Salesforce Setup interface for the Order Item object. The left sidebar lists various configuration options under 'Page Layouts'. The main area displays the 'Order Item Detail' page layout. It features a 'Fields' section with a 'Quick Find' field and a table showing fields like 'Section', 'Blank Space', 'Last Modified By', 'Quantity Ordered', 'Order Item ID', 'Order Received', 'Created By', and 'Purchase Order ID'. Below this is an 'Order Item Detail' section containing fields for Order Item ID, Amount, Purchase Order ID, Product ID, Unit Price, Quantity Ordered, and Quantity Received. Standard buttons for Edit, Delete, Clone, Change Owner, Change Record Type, Printable View, Edit Labels, and Custom Buttons are present. The bottom of the layout includes sections for Information, Product details, System Information, and Custom Links.

PAGE LAYOUT FOR INVENTORY TRANSACTION

The screenshot shows the Salesforce Setup interface under the Object Manager section for the 'Inventory Transaction' object. The left sidebar lists various configuration options 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, Restriction Rules, and Scoping Rules. The main workspace displays the 'Inventory Transaction Detail' page layout. At the top, there's a toolbar with Save, Quick Save, Preview As..., Cancel, Undo, Redo, and Layout Properties buttons. Below the toolbar is a 'Fields' section containing fields such as Section, Last Modified By, Transaction Date, Blank Space, Owner, Purchase Order ID, Created By, Transaction Type, Inventory Transaction, and Total Order Cost. The main content area shows the 'Inventory Transaction Detail' section with fields for Inventory Transaction ID, Purchase Order ID, Transaction Type, Transaction Date, Total Order Cost, Created By, Last Modified By, and Owner. Standard buttons at the bottom include Edit, Delete, Clone, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels.

PAGE LAYOUT FOR SUPPLIER

The screenshot shows the Salesforce Setup interface under the Object Manager section for the 'Supplier' object. The left sidebar lists similar configuration options as the previous screenshot. The main workspace displays the 'Supplier Detail' page layout. The 'Fields' section includes fields for Section, Created By, Phone Number, Blank Space, Email, Supplier ID, Address, Last Modified By, Supplier Name, Contact Person, and Owner. The main content area shows the 'Supplier Detail' section with fields for Supplier ID, Supplier Name, Contact Person, Phone Number, Email, Address, and Owner. Standard buttons at the bottom include Edit, Delete, Clone, Change Owner, Change Record Type, Printable View, Sharing, Sharing Hierarchy, and Edit Labels. A note at the bottom of the content area states: '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.'

COMPACT LAYOUTS FOR PRODUCT AND PURCHASE ORDER OBJECTS

The screenshot shows the Salesforce Object Manager interface for the Product object. The left sidebar is expanded, showing various configuration options under the 'Compact Layouts' section. The main content area displays the 'Product Compact Layout' detail page. The layout includes fields for Label (Product Compact Layout), API Name (Product_Compact_Layout), and Included Fields (Product Name, Unit Price, Current Stock Level). It also shows the creation and modification details, both attributed to 'RIFANA FATHIMA' on 9/6/2025 at 5:53 AM.

The screenshot shows the Salesforce Object Manager interface for the Purchase Order object. The left sidebar is expanded, showing various configuration options under the 'Compact Layouts' section. The main content area displays the 'Purchase Order Compact Layout' detail page. The layout includes fields for Label (Purchase Order Compact Layout), API Name (Purchase_Order_Compact_Layout), and Included Fields (Purchase Order ID, Supplier ID, Order Date, Total Order Cost). It also shows the creation and modification details, both attributed to 'RIFANA FATHIMA' on 9/6/2025 at 5:57 AM.

IMPLEMENTED A VALIDATION RULE FOR PURCHASE ORDER OBJECT

The screenshot shows the Salesforce Setup interface for creating a validation rule for the Purchase Order object. The URL is <https://orgfarm-0d943e41a0-dev-ed.lightning.force.com/lightning/setup/ObjectManager/011gL0000020Z8n/ValidationRules/03dgL00000PmV/edit>.

Purchase Order Validation Rule Details:

- Rule Name:** Expected_Delivery_Date_Validation
- Active:**
- Description:** (Empty)
- Error Condition Formula:** `(Expected_Delivery_Date__c - Order_Date__c) > 7`
- Functions:** A dropdown menu is open, showing:
 - ABS
 - ACOS
 - ADDMONTHS
 - AND
 - ASCII
 - ASIN

Error Message Example: Discount_percent cannot exceed 30%

This message will appear when Error Condition formula is true

Error Message: The Expected Delivery Date should not exceed 7 days.

Error Location: Top of Page Field

Buttons: Save, Save & New, Cancel

PROFILES

Profiles control a user's permissions to objects, fields, tabs, apps, and other settings. Each user in Salesforce must be assigned a profile, and the profile assigned to a user determines what they can see and do in the system.

Here we have created Inventory management profile and Purchase management profile.

ROLES

Roles are used to control record-level access and define the hierarchy of an organization, determining the level of visibility and sharing of records among users. Roles work in conjunction with profiles to provide a robust security model. While profiles control what actions users can perform (object and field permissions), roles control which records users can see based on their position in the hierarchy.

Here we have created roles for Purchasing management and Inventory management.

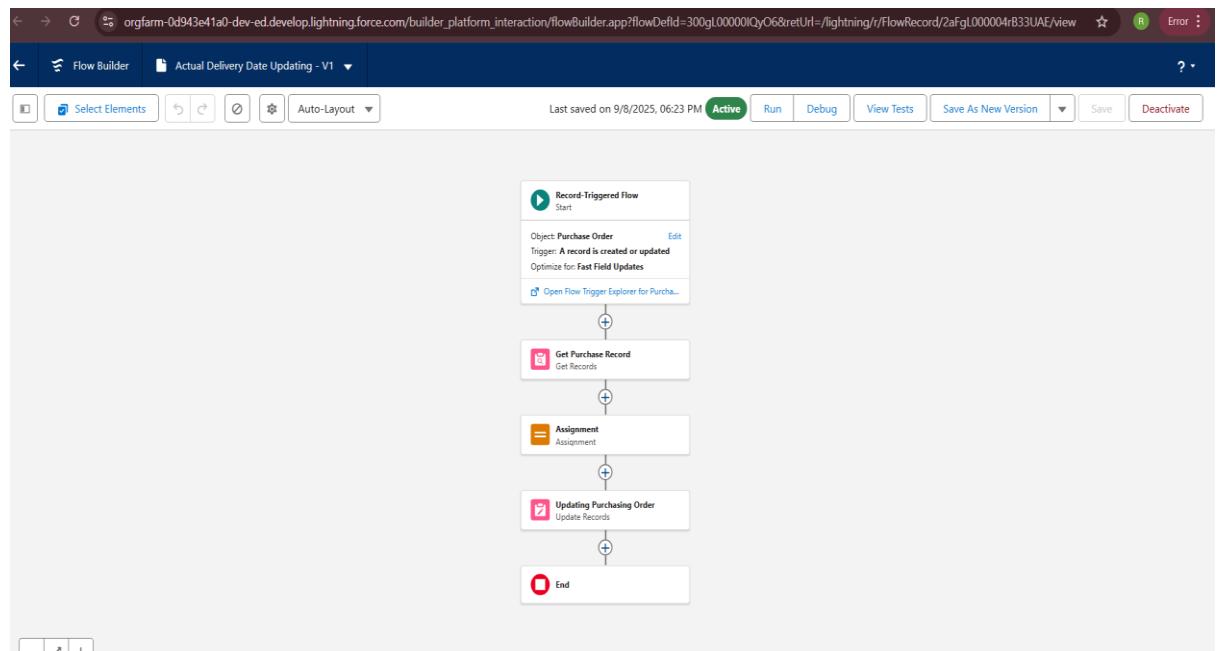
PERMISSION SET

Permission set allow administrators to grant additional access to various tools and functions without altering the user's profile. They are particularly useful for providing specialized permissions to specific users without the need to create multiple profiles.

Here we have given permission set to a user named John Purchase M.

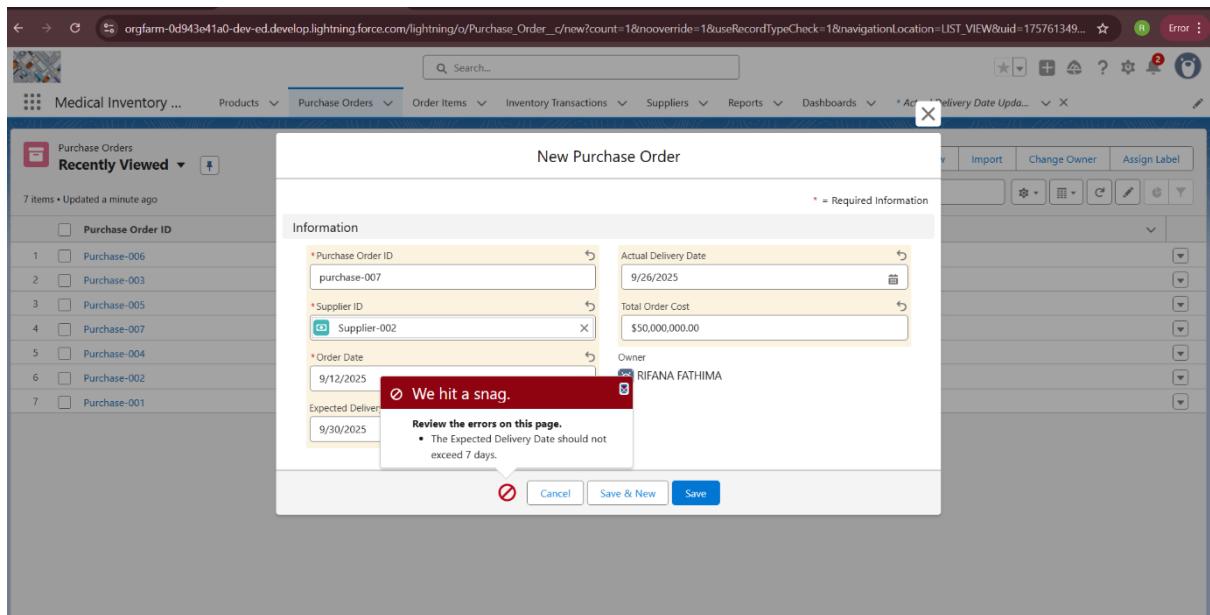
FLOWS

Established flows to update the Actual Delivery Date.



FUNCTIONAL AND PERFORMANCE TESTING

VALIDATION RULE



TRIGGERS

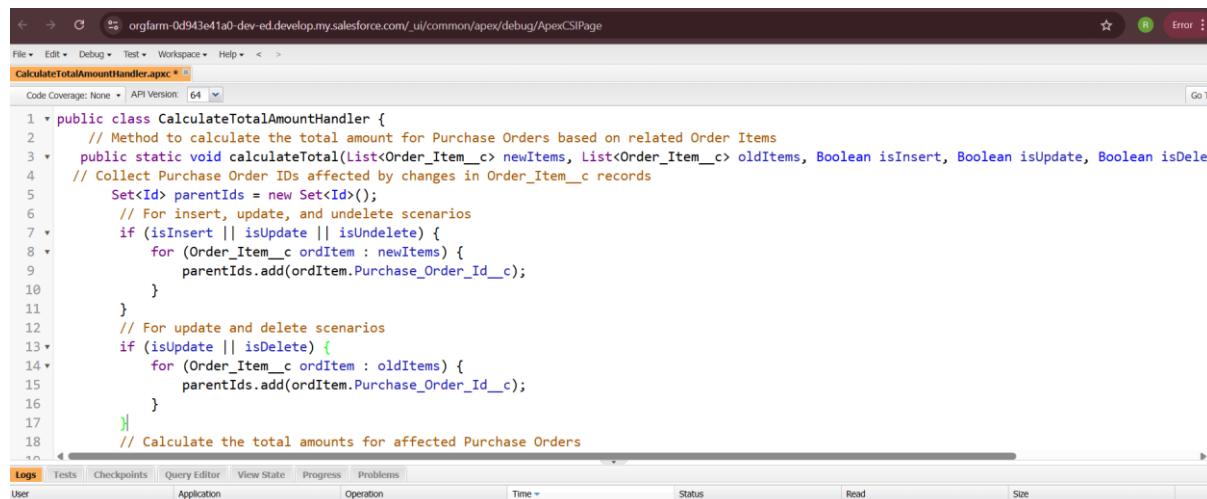
APEX TRIGGER

Created an Apex Trigger named CalculateTotalAmountTrigger on Order_Item__c to recalculate the total amount of the parent order (Order) whenever its related order items change.

Total Records	Total Order Count	Total Total Order Cost
7	5	\$81,490,977.00

APEX CLASS

Created an Apex class named CalculateTotalAmountHandler to keep the parent Purchase Order's total cost (Total_Order_cost__c) always accurate.



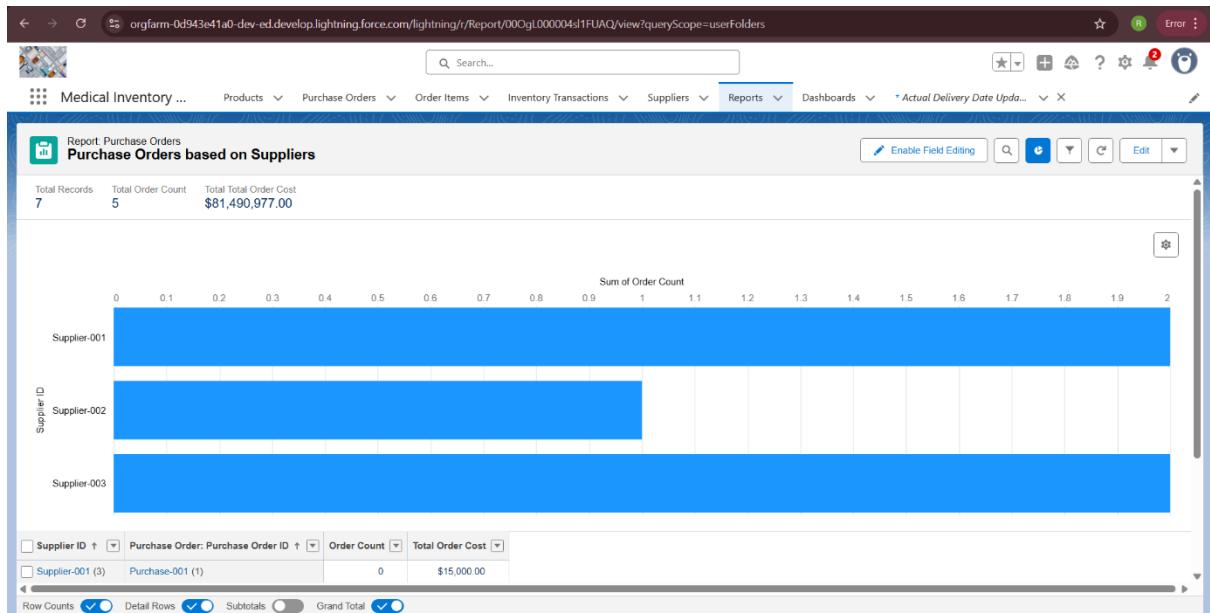
The screenshot shows the Salesforce IDE interface with the code editor open. The file is named 'CalculateTotalAmountHandler.apxc'. The code implements a static method 'calculateTotal' that takes lists of new and old Order Item records, and boolean parameters for insert, update, and delete operations. It collects Purchase Order IDs affected by changes and calculates the total amount for those orders.

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

REPORTS

We have created reports for two data:

- i)Purchase Orders based on Suppliers
- ii)complete purchase detail



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

Total Records: 5 Total Order Count: 5 Total Quantity Received: 13,340 Total Amount: \$145,977.00

Supplier ID	Actual Delivery Date	Purchase Order: Purchase Order ID	Product ID: Product ID	Product ID: Product Name	Order Count	Quantity Received	Amount
Supplier-001 (2)	9/11/2025 (2)	Purchase-003 (2)	product-002	Diclofenac	2	6,800	\$76,840.00
			product-001	Aspirin Tablets	2	440	\$1,188.00
					2	7,240	\$78,028.00
					2	7,240	\$78,028.00
					2	7,240	\$78,028.00
Supplier-002 (1)	9/5/2025 (1)	Purchase-005 (1)	product-002	Diclofenac	1	800	\$9,040.00
					1	800	\$9,040.00
					1	800	\$9,040.00
					1	800	\$9,040.00
Supplier-003 (2)	9/20/2025 (2)	Purchase-006 (2)	product-002	Diclofenac	2	5,000	\$56,500.00
			product-004	Paracetamol Tablets	2	300	\$2,409.00
					2	5,300	\$58,909.00
					2	5,300	\$58,909.00
					5	13,340	\$145,977.00

Row Counts: Detail Rows: Subtotals: Grand Total:

RESULTS

OUTPUT SCREENS

MEDICAL INVENTORY MANAGEMENT APP

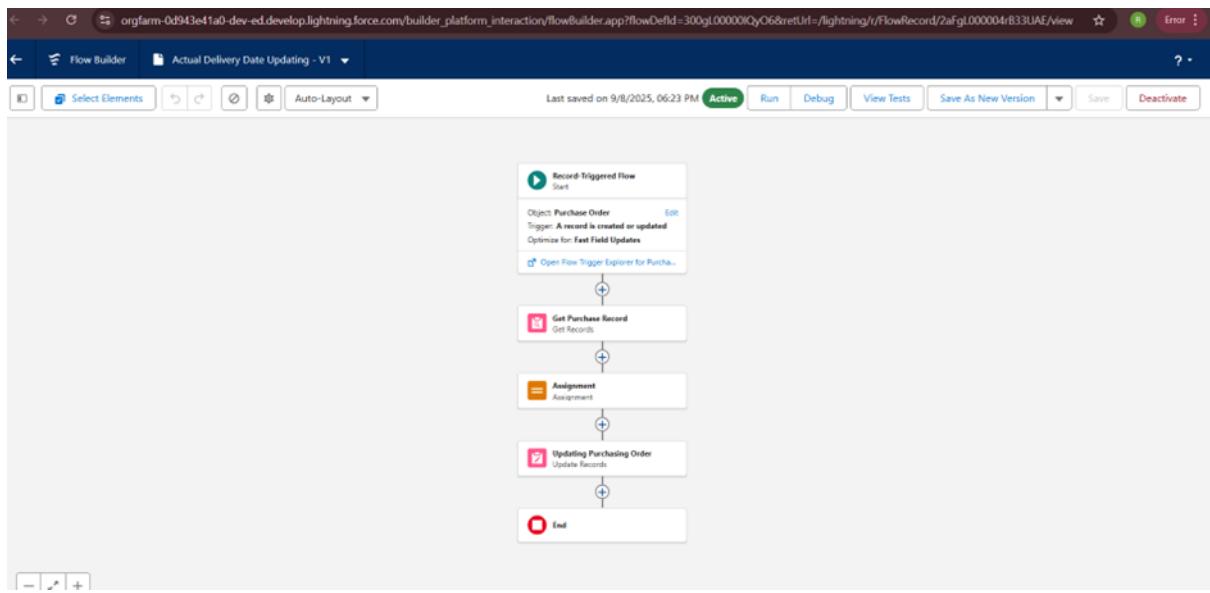
TABS

Created tabs for objects

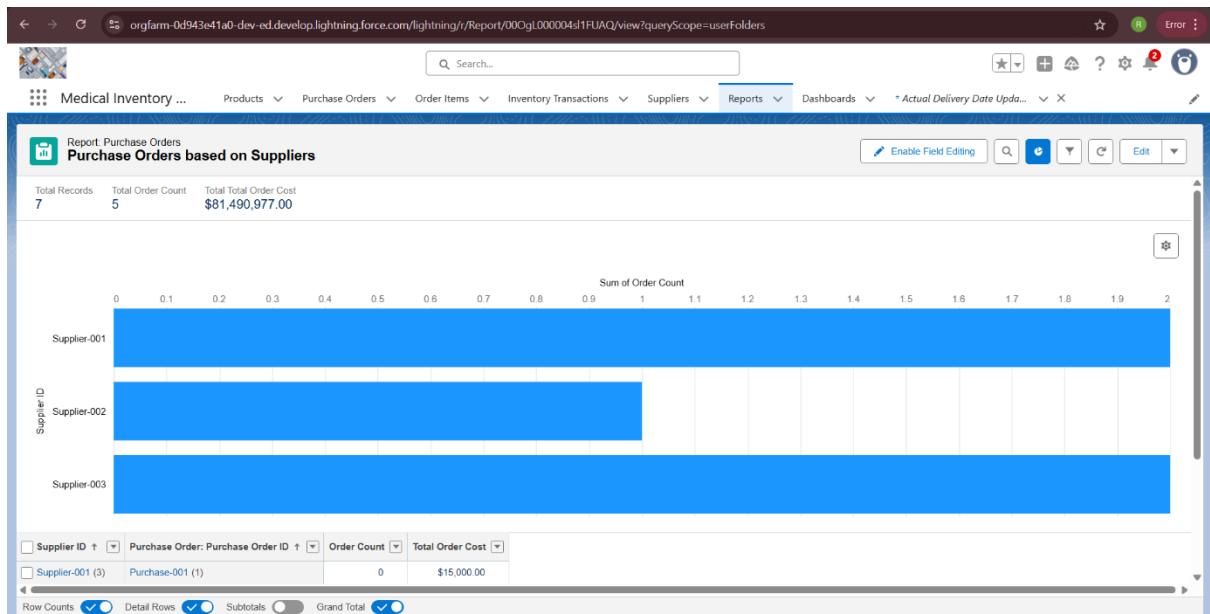
Action	Label	Tab Style	Description
Edit Del	Inventory Transactions	Computer	
Edit Del	Order Items	Truck	
Edit Del	Products	Stethoscope	
Edit Del	Purchase Orders	Box	
Edit Del	Suppliers	Stack of Cash	

FLOWS

ACTUAL DELIVERY DATE UPDATING



REPORTS



Medical Inventory ... Products Purchase Orders Order Items Inventory Transactions Suppliers Reports Dashboards * Actual Delivery Date Upda... X

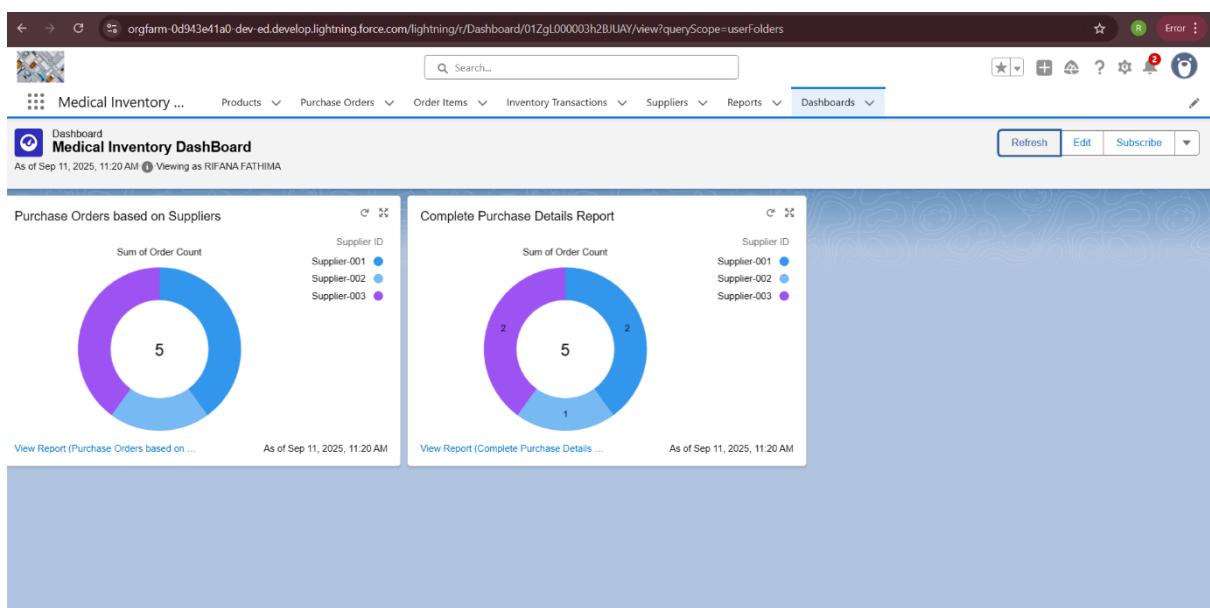
Report: Purchase Orders with Order Items and Product ID
Complete Purchase Details Report

Total Records 5 Total Order Count 13,340 Total Amount \$145,977.00

Supplier ID	Actual Delivery Date	Purchase Order: Purchase Order ID	Product ID: Product ID	Product ID: Product Name	Order Count	Quantity Received	Amount
Supplier-001 (2)	9/11/2025 (2)	Purchase-003 (2)	product-002	Diclofenac	2	6,800	\$76,840.00
			product-001	Aspirin Tablets	2	440	\$1,188.00
					2	7,240	\$78,028.00
					2	7,240	\$78,028.00
					2	7,240	\$78,028.00
Supplier-002 (1)	9/5/2025 (1)	Purchase-005 (1)	product-002	Diclofenac	1	800	\$9,040.00
					1	800	\$9,040.00
					1	800	\$9,040.00
					1	800	\$9,040.00
Supplier-003 (2)	9/20/2025 (2)	Purchase-006 (2)	product-002	Diclofenac	2	5,000	\$56,500.00
			product-004	Paracetamol Tablets	2	300	\$2,409.00
					2	5,300	\$58,909.00
					2	5,300	\$58,909.00
					2	5,300	\$58,909.00
					5	13,340	\$145,977.00

Row Counts Detail Rows Subtotals Grand Total

DASHBOARDS



PRONS AND CONS OF MEDICAL INVENTORY MANAGEMENT

PRONS:

- Ensures Availability of Supplies
- Prevents stockouts of critical medicines, equipment, or consumables
- Saves lives by ensuring treatments aren't delayed.
- Reduces Wastage
- Tracks expiry dates and avoids overstocking
- Minimizes financial loss from expired or unused items.
- Improves Patient Safety
- Ensures only valid and safe supplies are used.
- Reduces risks of errors (like using expired drugs)
- Cost Control & Efficiency
- Optimizes purchasing and storage
- Reduces unnecessary spending.
- Better Decision-Making
- Reporting and analytics help forecast demand.
- Managers can negotiate better with suppliers.
- Time-Saving Automation
- Features like auto-reorder and barcode scanning reduce manual work.
- Regulatory Compliance
- Maintains accurate records for audits and healthcare regulations.

CONS:

- High Initial Setup Cost
- Advanced inventory systems (software + hardware) can be expensive.
- Training Requirement
- Staff need training to properly use the system.
- Resistance to adopting new technology can be a challenge.
- Dependence on Technology
- System downtime, bugs, or cyber-attacks can disrupt operations.
- Data Entry Errors
- If staff enter wrong data (e.g., quantity, batch number), reports and stock tracking become unreliable.
- Maintenance Costs
- Regular updates, support, and system maintenance add ongoing costs
- Integration Challenges

- Sometimes hard to integrate with other hospital systems (like billing or electronic medical records).
- Risk of Over-Reliance
- Too much dependence on automation can cause issues if manual checks are ignored.

CONCLUSION

The Medical Inventory Management system provides an effective solution to one of the most critical challenges in healthcare: ensuring the right supplies are available at the right time while minimizing costs and wastage. By automating processes such as stock tracking, expiry monitoring, supplier management, and real-time reporting, the system reduces human errors and enhances operational efficiency. This not only supports better decision-making and regulatory compliance but also directly contributes to improved patient safety and service quality. Although initial implementation requires investment in technology and training, the long-term benefits in terms of reliability, cost savings, and optimized resource utilization outweigh these challenges. Therefore, a well-structured medical inventory management system is essential for sustainable healthcare operations and for strengthening the overall quality of patient care.

APPENDIX

Source Code: provided in Apex Class and Trigger

CalculateTotalAmountHandler.apxc

```

public class CalculateTotalAmountHandler {
    public static void calculateTotal(List<Order_Item__c> newItems,
List<Order_Item__c> oldItems, Boolean isInsert, Boolean isUpdate, Boolean isDelete,
Boolean isUndelete) {
        Set<Id> parentIds = new Set<Id>();
        if (isInsert || isUpdate || isUndelete) {
            for (Order_Item__c ordItem : newItems) {
                parentIds.add(ordItem.Purchase_Order_Id__c);
            }
        }
    }
}

```

```

        }

    }

    if (isUpdate || isDelete) {
        for (Order_Item__c ordItem : oldItems) {
            parentIds.add(ordItem.Purchase_Order_Id__c);
        }
    }

    Map<Id, Decimal> purchaseToUpdateMap = new Map<Id, Decimal>();
    if (!parentIds.isEmpty()) {
        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
        ];
        for (AggregateResult aggr : aggrList) {
            Id purchaseOrderId = (Id)aggr.get('Purchase_Order_Id__c');
            Decimal totalAmount = (Decimal)aggr.get('totalAmount');
            purchaseToUpdateMap.put(purchaseOrderId, totalAmount);
        }
        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);
        }
        if (!purchaseToUpdate.isEmpty()) {
            update purchaseToUpdate;
        }
    }
}

```

```
    }
}
}
}
```

CalculateTotalAmountTrigger.apxt

```
trigger CalculateTotalAmountTrigger on Order__Item__c (after insert, after update,
after delete, after undelete) {
    CalculateTotalAmountHandler.calculateTotal(Trigger.new, Trigger.old,
Trigger.isInsert, Trigger.isUpdate, Trigger.isDelete, Trigger.isUndelete);
}
```