

Medical Inventory Management System

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ABSTRACT

Effective inventory management is critical in the healthcare sector to ensure the availability of medical supplies, reduce waste, and maintain compliance with regulatory standards. This project introduces a **Medical Inventory Management System** built on the **Salesforce platform**, leveraging its cloud-based infrastructure, automation capabilities, and customizable data models. The system enables real-time tracking of medical inventory, including pharmaceuticals, equipment, and consumables, across multiple locations. Key features include automated stock level alerts, expiry tracking, purchase order management, vendor integration, and comprehensive reporting dashboards. By utilizing Salesforce's native tools such as **Salesforce Flow, Apex, Lightning Components, and Reports & Dashboards**, the solution enhances operational efficiency, minimizes human error, and provides data-driven insights for inventory optimization. This project demonstrates how Salesforce can be adapted beyond traditional CRM use cases to support critical healthcare logistics and supply chain processes.

1.INTRODUCTION

1.1 Project Overview

The **Medical Inventory Management System** is a cloud-based solution developed on the **Salesforce platform** to streamline the tracking, ordering, and management of medical supplies and equipment in healthcare organizations. Traditional inventory systems in the medical field often suffer from issues such as manual errors, lack of real-time visibility, stockouts, overstocking, and difficulties in regulatory compliance. This project addresses these challenges by utilizing the flexibility and automation capabilities of Salesforce to create a centralized, intelligent inventory system.

1.2 Purpose

This project aims to solve these problems by leveraging Salesforce's robust CRM platform and customizing it for inventory management. The system is designed to:

- **Ensure optimal stock levels** and timely replenishment
- **Improve patient safety** by preventing the use of expired or unapproved items
- **Enhance operational efficiency** by automating routine inventory tasks
- **Provide real-time data and insights** for better decision-making

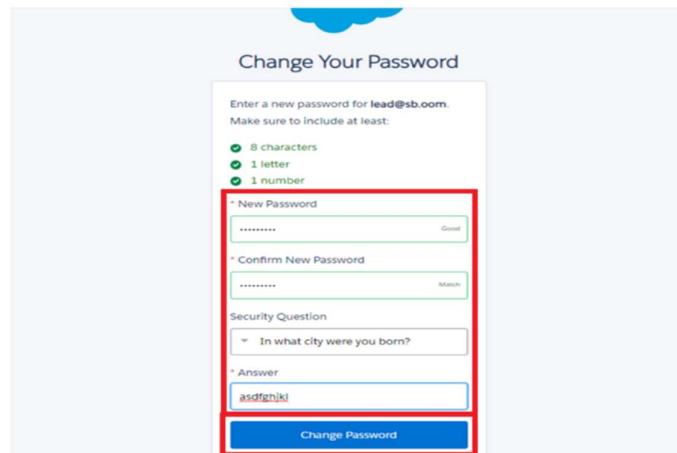
- **Ensure compliance** with healthcare regulations through traceability and audit logs

Ultimately, the project seeks to enhance the quality of healthcare service delivery by ensuring that the right medical supplies are available at the right time and place, while minimizing waste, cost, and administrative burden.

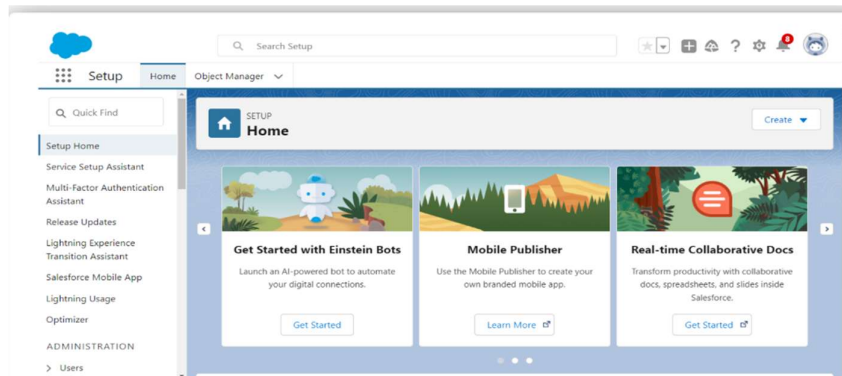
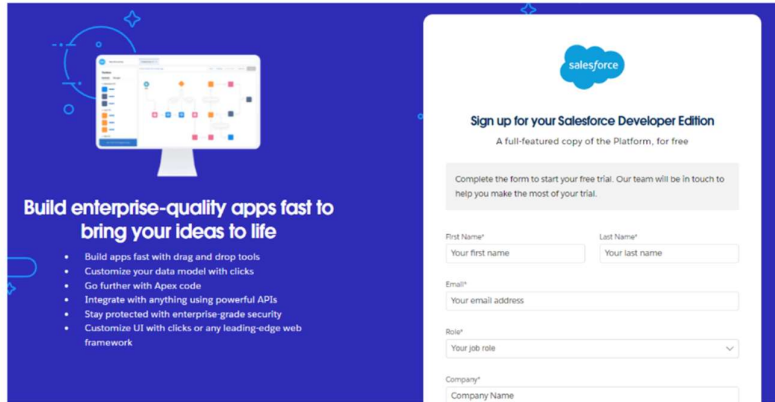
DEVELOPMENT PHASE:

Creating Developer Account:

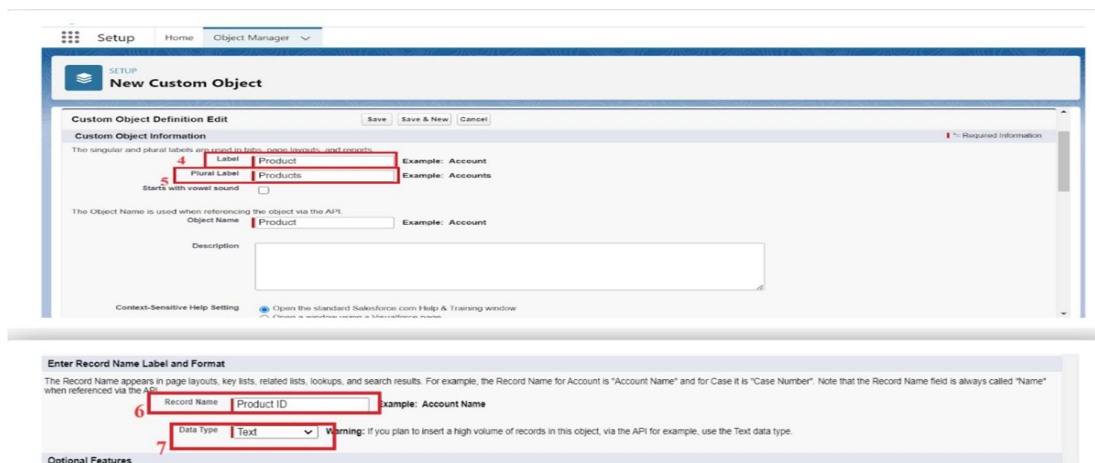
By using this URL: <https://www.salesforce.com/form/developer-signup/?d=pb>



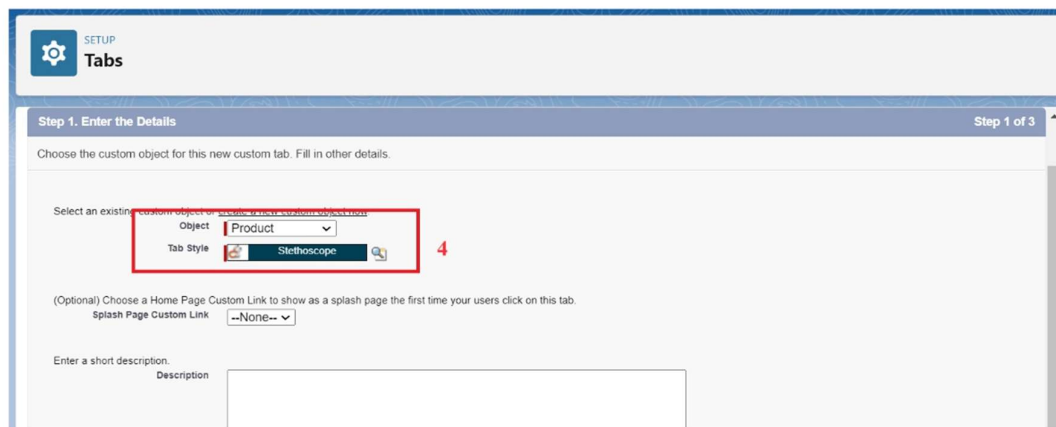
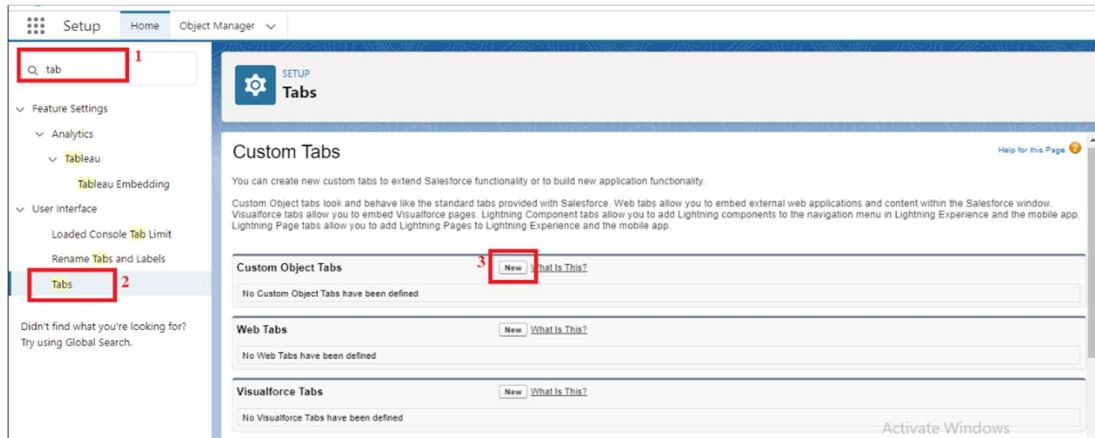
The screenshot shows the 'Change Your Password' form for a Salesforce developer account. The form is titled 'Change Your Password' and includes instructions to enter a new password for 'lead@sb.com'. It lists password requirements: 8 characters, 1 letter, and 1 number. The form fields are: 'New Password' (with a 'Good' status), 'Confirm New Password' (with a 'Match' status), 'Security Question' (with a dropdown menu showing 'In what city were you born?'), and 'Answer' (with the text 'asdfghjkl'). A red rectangular box highlights the 'New Password', 'Confirm New Password', 'Security Question', 'Answer', and 'Change Password' button fields. The 'Change Password' button is a blue button at the bottom of the form.



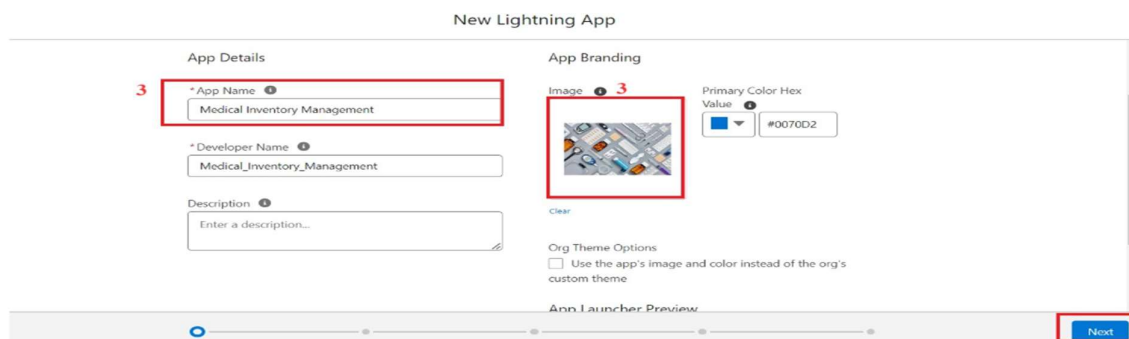
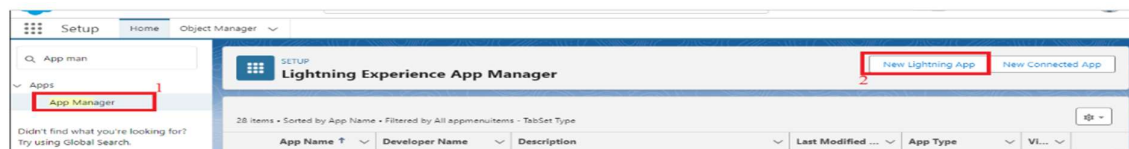
Create a Object Creation



Tabs



The Lightning App



New Lightning App

User Profiles

Choose the user profiles that can access this app.

7

Available Profiles

System Administrator

Selected Profiles

Back

8
Save & Finish

Fields

Step 2. Enter the details

Step 2 of 4

Previous Next Cancel

Field Label 7

Please enter the maximum length for a text field below.

Length 9

Field Name 7

Description

Help Text

Required ☒ Always require a value in this field in order to save a record 8

Unique ☐ Do not allow duplicate values

☐ Treat "ABC" and "abc" as duplicate values (case insensitive)

☐ Treat "ABC" and "abc" as different values (case sensitive)

External ID ☐ Set this field as the unique record identifier from an external system

Auto add to custom report type ☒ Add this field to existing custom report types that contain this entity

Step 2. Enter the details

Step 2 of 4

Previous Next Cancel

Field Label 7

Field Name 8

Description

Help Text

Required ☐ Always require a value in this field in order to save a record

Auto add to custom report type ☒ Add this field to existing custom report types that contain this entity

Default Value

Use [formula syntax](#). Enclose text and picklist value API names in double quotes: ("the_text"). Include numbers without quotes (25). Show percentages as decimals (0.10), and express date calculations in the standard format (Today() + 7). To reference a field from a Custom Metadata type record use: SCustomMetadataType__mdt.RecordAPIName.Field__c

Step 2. Enter the details

Step 2 of 4

PreviousNextCancel

Field Label

Current Stock Level

5

7

Please enter the length of the number and the number of decimal places. For example, a number with a length of 8 and 2 decimal places can accept values up to "12345678.90".

6

Length

18

Decimal Places

0

Number of digits to the left of the decimal point

Number of digits to the right of the decimal point

Field Name

Current_Stock_Level

Description

Help Text

Required

☐ Always require a value in this field in order to save a record

Unique

☐ Do not allow duplicate values

External ID

☐ Set this field as the unique record identifier from an external system

Step 2. Enter the details

Step 2 of 4

PreviousNextCancel

Field Label

Unit Price

5

8

Please enter the length of the number and the number of decimal places. For example, a number with a length of 8 and 2 decimal places can accept values up to "12345678.90".

6

Length

16

Decimal Places

2

Number of digits to the left of the decimal point

Number of digits to the right of the decimal point

Field Name

Unit_Price

Description

Help Text

Required

☒ Always require a value in this field in order to save a record

7

Auto add to custom report type

☒ Add this field to existing custom report types that contain this entity

PreviousNextCancel

Field Label

Supplier ID

7

9

Field Name

Supplier_ID

Description

Help Text

Child Relationship Name

Purchase_Orders

Required

☒ Always require a value in this field in order to save a record

8

What to do if the lookup record is deleted?

☐ Clear the value of this field. You can't choose this option if you make this field required.

☐ Don't allow deletion of the lookup record that's part of a lookup relationship.

Auto add to custom report type

☒ Add this field to existing custom report types that contain this entity

Step 2. Enter the details Step 2 of 4

Previous **Next** Cancel

Field Label 5

Field Name 6

Description

Help Text

Required ☐ Always require a value in this field in order to save a record

Auto add to custom report type ☒ Add this field to existing custom report types that contain this entity 6

Default Value

Use formula syntax. Enclose text and picklist value API names in double quotes ("the_text"). Include numbers without quotes. (25). Show percentages as decimals. (0.10), and express date calculations in the standard format. (Today()) + 7). To reference a field from a Custom Metadata type record use: \$CustomMetadata.Type__mdt.RecordAPIName.Field__c

Purchase Order
New Custom Field Help for this Page

Step 3. Define the summary calculation Step 3 of 5

Previous **Next** Cancel

Select Object to Summarize 8 Required information

Master Object

Summarized Object 6

Select Roll-Up Type

☒ COUNT 7

☐ SUM

☐ MIN

☐ MAX

Field to Aggregate

Filter Criteria

☒ All records should be included in the calculation

☐ Only records meeting certain criteria should be included in the calculation

Order Item
New Custom Field Help for this Page

Step 3. Enter formula Step 3 of 5

Previous **Next** Cancel

Enter your formula and click Check Syntax to check for errors. Click the Advanced Formula subtab to use additional fields, operators, and functions.

Example: [More Examples](#)

Simple Formula **Advanced Formula**

Insert Field 7

Insert Operator

Functions

-- All Function Categories --

ABS

ACOS

ADDMONTHS

AND

ASCII

ASIN

Insert Selected Function

Quick Tips 8

- Getting Started
- Operators & Functions

Simple Formula Advanced Formula

Insert Field Insert Operator ▼

Amount (Currency)=
Quantity_Received_c * Unit_Price_c

Functions
-- All Function Categories --
ABS
ACOS
ADDMONTHS
AND
ASCII
ASIN
Insert Selected Function

7

Step 2. Enter the details Step 2 of 4

Previous Next Cancel

Field Label Transaction Type

Values
☐ Use global picklist value set
☒ Enter values, with each value separated by a new line

Receipt
Issue
Adjustment

☐ Display values alphabetically, not in the order entered
☐ Use first value as default value
☒ Restrict picklist to the values defined in the value set

Field Name Transaction_Type

Description

OneDrive - Personal Online

5 6 7

Step 2. Enter the details Step 2 of 4

Previous Next Cancel

Field Label Phone Number

Field Name Phone_Number

Description

Help Text

Required ☒ Always require a value in this field in order to save a record

Auto add to custom report type ☒ Add this field to existing custom report types that contain this entity

Default Value Show Formula Editor

Use formula syntax: Enclose text and picklist value API names in double quotes ("the_text"), include numbers without quotes (25), show percentages as decimals (0.10), and express date calculations in the standard format (Today() + 7). To reference a field from a Custom Metadata type record use: \$CustomMetadata.Type__mdt.RecordAPIName.Field__c

5 6 7

Updating of Page Layouts

SaveQuick SavePreview As...CancelUndoRedoLayout Properties

Fields

ButtonsQuick ActionsMobile & Lightning ActionsExpanded LookupsRelated ListsReport Charts

Quick FindField Name*

SectionLast Modified ByProduct ID

Blank SpaceMinimum Stock LevelProduct Name

Created ByOwnerUnit Price

Current Stock LevelProduct Description

Information (Header visible on edit only)

Product IDSample Text

Product NameSample Text

Product DescriptionSample Text

Unit Price₹123.45

Current Stock Level12,420

Minimum Stock Level21,114

OwnerSample Text

System Information (Header visible on edit only)

Created BySample Text

Last Modified BySample Text

SaveQuick SavePreview As...CancelUndoRedoLayout Properties

Fields

ButtonsQuick ActionsMobile & Lightning ActionsExpanded LookupsRelated ListsReport Charts

Quick FindField Name*

SectionExpected Delivery...Owner

Blank SpaceLast Modified ByPurchase Order ID

Actual Delivery DateOrder CountSupplier ID

Created ByOrder DateTotal Order Cost

Information (Header visible on edit only)

Purchase Order IDSample Text

Supplier IDSample Text

Order Date07/07/2024

Expected Delivery Date07/07/2024

Actual Delivery Date07/07/2024

Order Count36,243

Total Order Cost₹123.45

OwnerSample Text

System Information (Header visible on edit only)

Created BySample Text

Last Modified BySample Text

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

SaveQuick SavePreview As...CancelUndoRedoLayout Properties

Fields

Quick FindField Name*

Section

Blank Space

Amount

Created By

Last Modified By

Order Item ID

Product ID

Purchase Order ID

Quantity Ordered

Quantity Received

Unit Price

Information (Header visible on edit only)

Order Item ID

Sample Text

Purchase Order ID

Sample Text

Amount

₹123.45

Product details

Product ID

Sample Text

Unit Price

₹123.45

Quantity Ordered

23,712

Quantity Received

33,407

System information (Header visible on edit only)

Created By

Sample Text

Last Modified By

Sample Text

Custom Links (Header visible on edit only)

SETUP > OBJECT MANAGER

Inventory Transaction

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

SaveQuick SavePreview As...CancelUndoRedoLayout Properties

Fields

Quick FindField Name*

Section

Blank Space

Created By

Last Modified By

Owner

Purchase Order ID

Total Order Cost

Transaction Date

Transaction ID

Purchase Order ID

Transaction Type

Transaction Date

Transaction ID

Sample Text

Purchase Order ID

Sample Text

Transaction Type

Sample Text

Transaction Date

07/07/2024

Total Order Cost

₹123.45

Information (Header visible on edit only)

Transaction ID

Sample Text

Purchase Order ID

Sample Text

Transaction Type

Sample Text

Transaction Date

07/07/2024

Total Order Cost

₹123.45

Owner

Sample Text

System information (Header visible on edit only)

Created By

Sample Text

Last Modified By

Sample Text

Custom Links (Header visible on edit only)

SETUP > OBJECT MANAGER

Supplier

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

SaveQuick SavePreview As...CancelUndoRedoLayout Properties

Fields

Quick FindField Name*

Section

Blank Space

Address

Contact Person

Created By

Email

Last Modified By

Owner

Phone Number

Supplier ID

Supplier Name

Information (Header visible on edit only)

Supplier ID

Sample Text

Supplier Name

Sample Text

Contact Person

Sample Text

Phone Number

1-415-555-1212

Email

sarah.sample@company.com

Address

Sample Text

Owner

Sample Text

System information (Header visible on edit only)

Created By

Sample Text

Last Modified By

Sample Text

Custom Links (Header visible on edit only)

Compact Layouts

Product Compact Layouts

Compact Layout Assignment

SaveCancel

Primary Compact Layout

Select the compact layout to use when this object's records appear as list items in the mobile app.

Primary Compact Layout:

Product Compact Layout

Save

Cancel

9

10

Purchase Order Compact Layouts

Compact Layout Assignment

10

SaveCancel

Primary Compact Layout

Select the compact layout to use when this object's records appear as list items in the mobile app.

Primary Compact Layout:

Purchase Order Compact Layout

Save

Cancel

9

Validation rules

Purchase Order Validation Rule

Help for this Page

Define a validation rule by specifying an error condition and a corresponding error message. The error condition is written as a Boolean formula expression that returns true or false. When the formula expression returns true, the save will be aborted and the error message will be displayed. The user can correct the error and try again.

Validation Rule Edit

SaveSave & NewCancel

Rule Name

Expected_Delivery_Date_Validation

Active

☒

Description

Quick Tips

• Operators & Functions

Error Condition Formula

Required Information

Example: Discount_Percent__c>0.30

More Examples

Display an error if Discount is more than 30%

If this formula expression is true, display the text defined in the Error Message area

Insert Field

Insert Operator

(Expected_Delivery_Date__c - Order_Date__c) > 7

Functions

-- All Function Categories --

ABS

ACOS

ADDMONTHS

AND

ASCII


ASIN

3

4

5

Profiles

 **SETUP**

Profiles

Custom App Settings

Required Information

	Visible	Default		Visible	Default
All Tabs (standard__AllTabSet)	<input checked="" type="checkbox"/>	<input type="radio"/>	Sales (standard__LightningSales)	<input checked="" type="checkbox"/>	<input type="radio"/>
Analytics Studio (standard__Insights)	<input checked="" type="checkbox"/>	<input type="radio"/>	Sales (standard__Sales)	<input checked="" type="checkbox"/>	<input type="radio"/>
App Launcher (standard__AppLauncher)	<input checked="" type="checkbox"/>	<input type="radio"/>	Sales Console (standard__LightningSalesConsole)	<input checked="" type="checkbox"/>	<input type="radio"/>
Bolt Solutions (standard__LightningBolt)	<input checked="" type="checkbox"/>	<input type="radio"/>	Salesforce Chatter (standard__Chatter)	<input checked="" type="checkbox"/>	<input type="radio"/>
Community (standard__Community)	<input checked="" type="checkbox"/>	<input type="radio"/>	Salesforce Scheduler Setup (standard__LightningScheduler)	<input type="checkbox"/>	<input type="radio"/>
Content (standard__Content)	<input checked="" type="checkbox"/>	<input type="radio"/>	Sample Console (standard__ServiceConsole)	<input type="checkbox"/>	<input type="radio"/>
Data Manager (standard__DataManager)	<input checked="" type="checkbox"/>	<input type="radio"/>	Service (standard__Service)	<input checked="" type="checkbox"/>	<input type="radio"/>
Digital Experiences (standard__SalesforceCMS)	<input checked="" type="checkbox"/>	<input type="radio"/>	Service Console (standard__LightningService)	<input checked="" type="checkbox"/>	<input type="radio"/>
Lightning Usage App (standard__LightningInstrumentation)	<input checked="" type="checkbox"/>	<input type="radio"/>	Site.com (standard__Sites)	<input checked="" type="checkbox"/>	<input type="radio"/>
Marketing CRM Classic (standard__Marketing)	<input checked="" type="checkbox"/>	<input type="radio"/>	Subscription Management (standard__RevenueCloudConsole)	<input checked="" type="checkbox"/>	<input type="radio"/>
Medical Inventory Management (Medical_Inventory_Management)	<input type="checkbox"/>	<input checked="" type="radio"/>	WDC (standard__Work)	<input checked="" type="checkbox"/>	<input type="radio"/>
Queue Management (standard__QueueManagement)	<input checked="" type="checkbox"/>	<input type="radio"/>			

Password Policies

User passwords expire in

Never expires

Enforce password history

3 passwords remembered

Minimum password length

8

Password complexity requirement

Must include alpha and numeric characters

Password question requirement

Cannot contain password

Maximum invalid login attempts

10

Lockout effective period

15 minutes

Obscure secret answer for password resets

☐

Require a minimum 1 day password lifetime

☐

Don't immediately expire links in forgot password emails


☐

Save

Save & New

Cancel

Roles

 **SETUP**
Roles

Role Edit
New Role

Role Edit

Label

Purchasing Manager

Role Name

Purchasing_Manager

This role reports to

SVP, Sales & Marketing


Role Name as displayed on reports

Save


Save & New

Cancel

Permission Sets

 **Purchase Manager Create Access**

Select Users to Assign

 **Active Users**

1 item selected

Search this list...

Full Name

Alias


Username

Role

Active

Profile

☐

 Annapurna Gurram


AGurram

medicalinventory@sb.com

☒

System Administrator

☐

 Chatter Expert


Chatter

chatty:00ddl0000058bqluaa.yrgohck7wjvo@chatter.salesforce.com

☒

Chatter Free User

☐

 Integration User


integ

integration@00ddl0000058bqluaa.com

☒

Analytics Cloud Integration User

☒

 John PurchaseM

jpurc


john@purchasem.com

Purchasing Manager

☒

Purchase Manager

☐

 Security User

sec

insightsecurity@00ddl0000058bqluaa.com

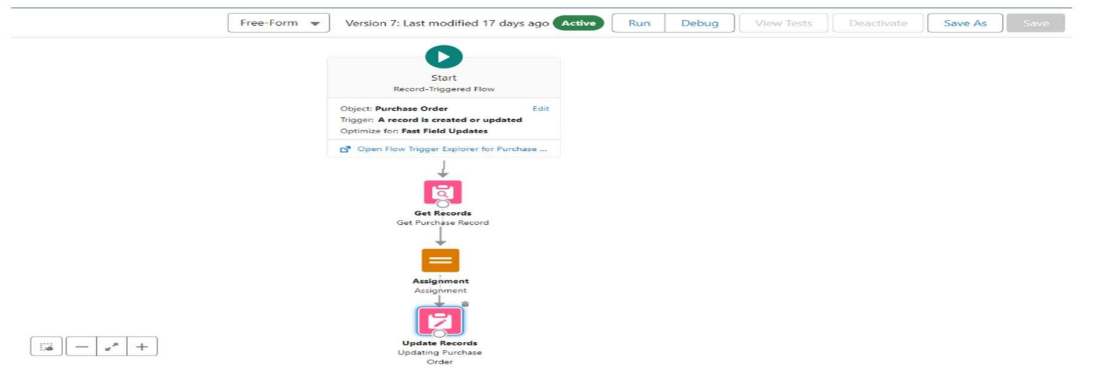
☒

Analytics Cloud Security User

Cancel

Next

Flows



Triggers

The screenshot shows the 'New Apex Trigger' dialog box. It has a 'Name' field containing 'CalculateTotalAmountTrigge' and an 'sObject' dropdown menu set to 'Order_Item__c'. A red rectangle highlights the 'Name' and 'sObject' fields. At the bottom right, there is a 'Submit' button, also highlighted with a red rectangle.

Reports

The screenshot shows the 'Create Report' interface. On the left, there's a 'Category' sidebar with 'All' selected. The main area is titled 'Select a Report Type' and shows a search bar with 'Purchase' entered. Below the search bar, it says 'Showing results for Purchase'. A table lists report types, with 'Purchase Orders' highlighted. The table has columns for 'Report Type Name' and 'Category'. On the right, there's a 'Details' panel for 'Purchase Orders' (Standard Report Type) with a 'Start Report' button highlighted. Below the 'Start Report' button, there's a 'Details' section with 'Fields (17)' and a 'Created By You' section showing 'Purchase Orders based on Suppliers'.

Report Type Name	Category
Purchase Orders	Standard
Purchase Orders with Supplier ID	Standard
Purchase Orders with Order Items	Standard
Purchase Orders with Order Items and Product ID	Standard
Inventory Transactions with Purchase Order ID	Standard

<

Dashboards

Add Widget

Report

Purchase Orders based on Supplier ✕

☐ Use chart settings from report ⓘ

Display As

Value

Sum of Total Order Cost

Sliced By

Supplier ID

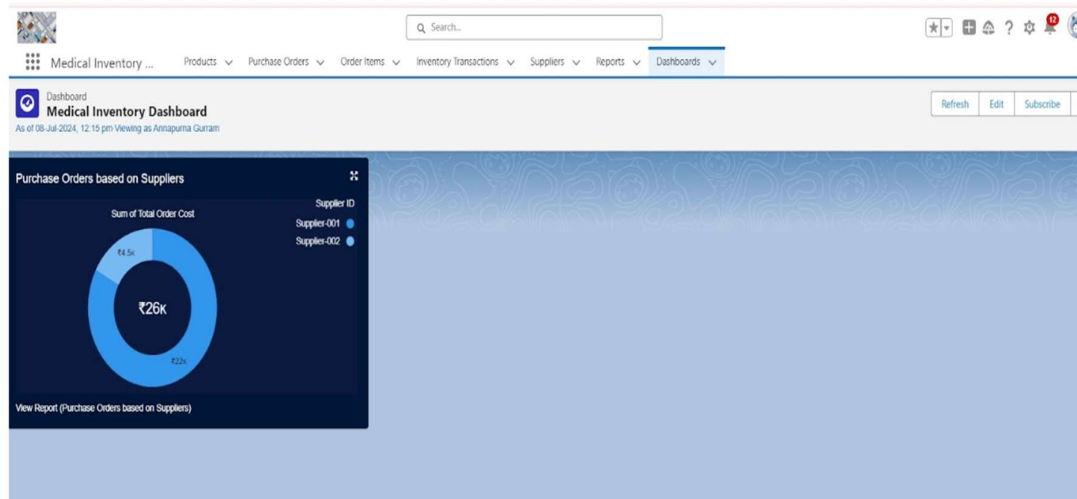
Display Units

Preview

Purchase Orders based on Suppliers

Supplier ID	Order Cost
Supplier-001	₹4.5k
Supplier-002	₹22k
Total	₹26k

View Report (Purchase Orders based on Suppliers)



Conclusion:

The Medical Inventory Management System developed on the Salesforce platform successfully demonstrates how cloud-based CRM technology can be adapted to meet the complex and critical needs of the healthcare industry. By automating inventory tracking, managing stock levels, monitoring expiry dates, and generating real-time reports, the system significantly improves the efficiency, accuracy, and reliability of medical inventory operations.

APPENDIX

- Source Code: Provided in Apex Classes And Trigger

CODE:

```
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> newItem, 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> parentId = new Set<Id>();

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

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

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

        if (!parentId.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 :parentId
                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;
    }
}
}
}
}

```