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
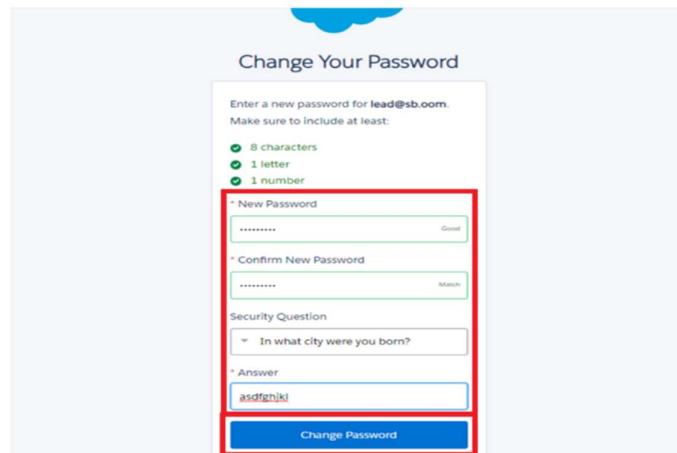- **Provide real-time data and insights** for better decision-making

- **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.
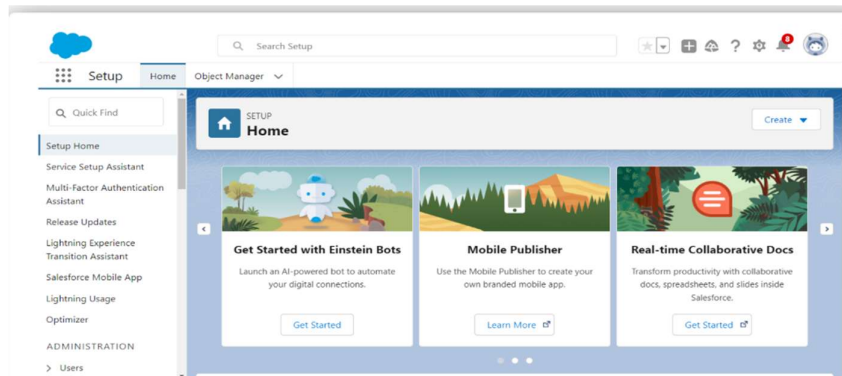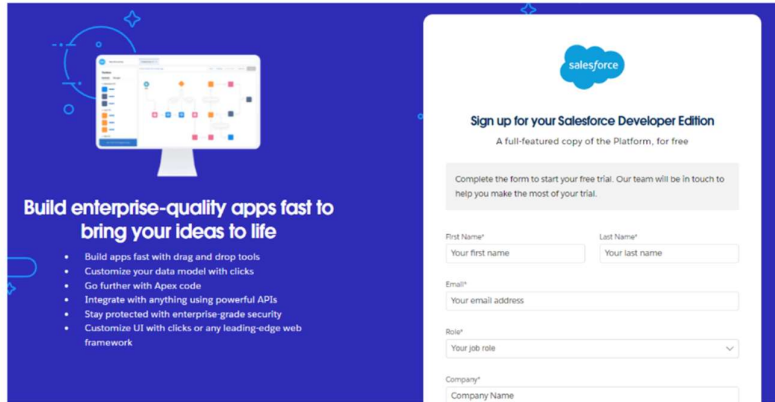
DEVELOPMENT PHASE:
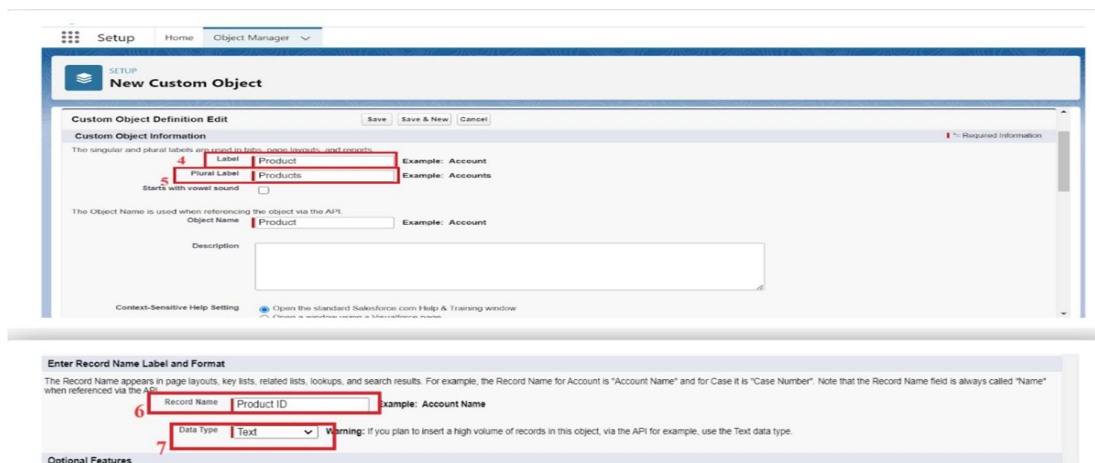
Creating Developer Account:

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

Create a Object Creation

Tabs
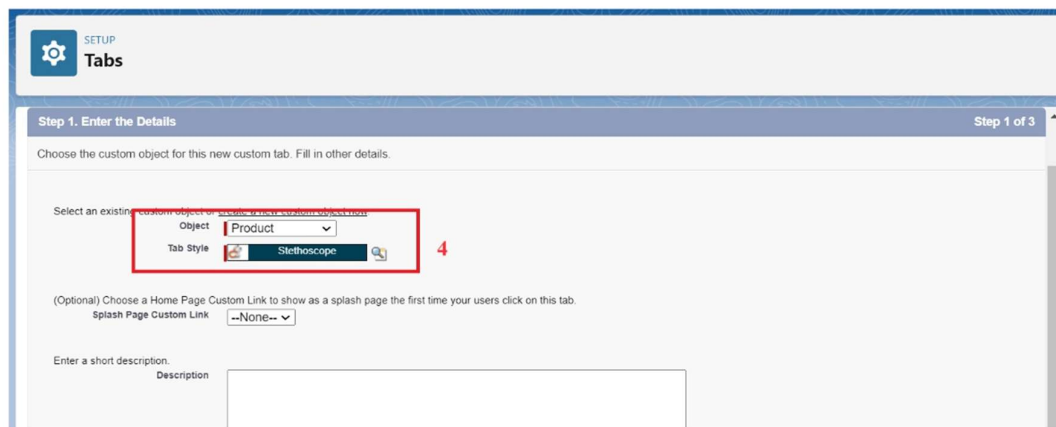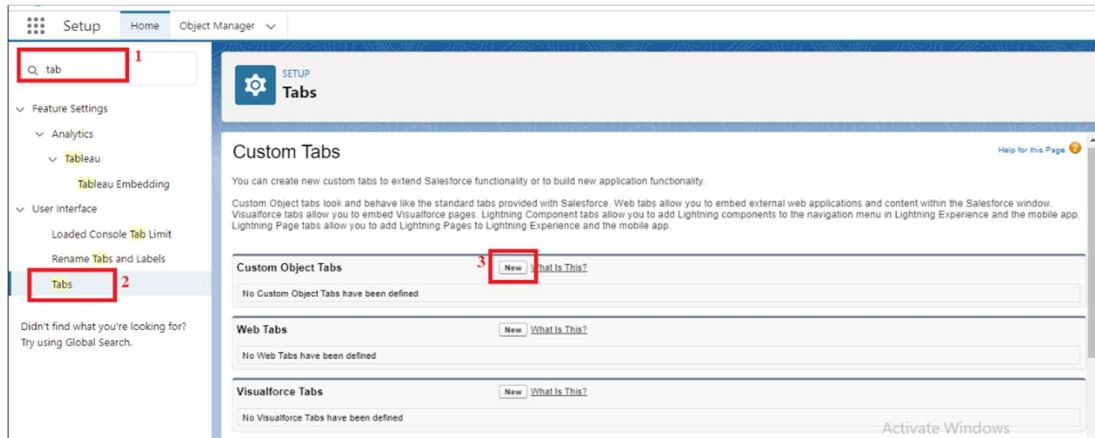
The Lightning App
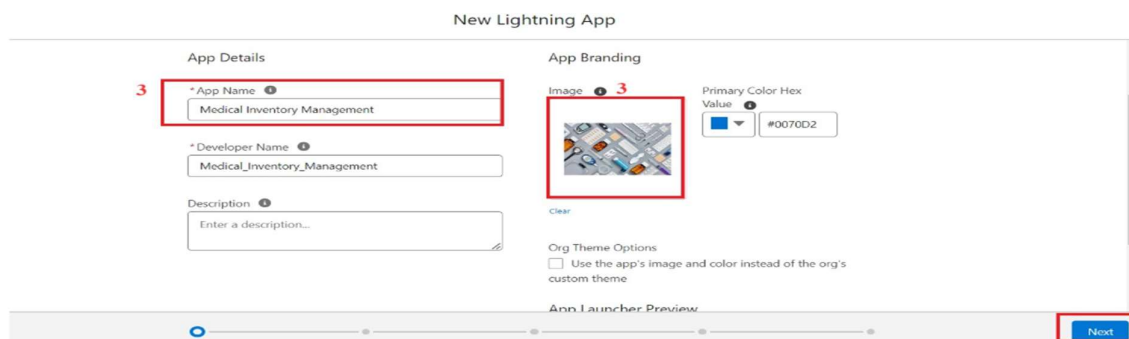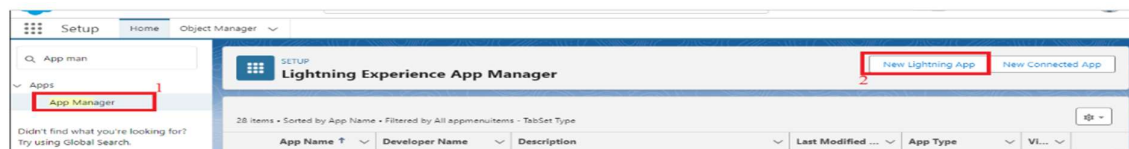
Fields

Previous | Next | Cancel

Field Label | Current Stock Level | [i] | 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 | [i]

Description | [   ]

Help Text | [   ] [i]

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

---

Previous | Next | Cancel

Field Label | Unit Price | [i] | 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 | [i]

Description | [   ]

Help Text | [   ] [i]

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 [i]

Previous | Next | Cancel

Field Label | Supplier ID | [i] | 7

9

Field Name | Supplier_ID | [i]
Description | [   ]

Help Text | [   ] [i]

Child Relationship Name | Purchase_Orders | [i]
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 [i]

Previous | Next | Cancel

Field Label | Order Date | i | 5

6

Field Name | Order_Date | i

Description | [   ]

Help Text | [   ] | i

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 | i

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

---

Purchase Order
New Custom Field

Previous | Next | Cancel

Select Object to Summarize   8   * = Required Information

Master Object | Purchase Order

Summarized Object | Order Items ▾ | 6

Select Roll-Up Type

◉ COUNT   7

○ SUM

○ MIN   Field to Aggregate --None-- ▾

○ MAX

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

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.

Quick Tips   8

Example: Gross Margin = Amount - Cost__c More Examples...

- Getting Started
- Operators & Functions

Simple Formula | **Advanced Formula**

Insert Field | Insert Operator ▾ | Functions

-- All Function Categories -- ▾

Unit Price (Currency) =

Product_ID__r.Unit_Price__c   7

ABS
ACOS
ADDMONTHS
AND
ASCII
ASIN

Insert Selected Function

Simple Formula | Advanced Formula

Insert Field   Insert Operator ▾   Functions
-- All Function Categories -- ▾

ABS
ACOS
ADDMONTHS
AND
ASCII
ASIN

Insert Selected Function

Amount (Currency) =
Quantity_Received__c * Unit_Price__c

7

Previous | Next | Cancel

Field Label   Transaction Type   ⓘ   5

7

Values   ○ Use global picklist value set

● Enter values, with each value separated by a new line

Receipt
Issue
Adjustment

6

☐ 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

Previous | Next | Cancel

Field Label   Phone Number   ⓘ   5

7

Field Name   Phone_Number   ⓘ

Description

Help Text   ⓘ

Required   ☑ Always require a value in this field in order to save a record   6

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

Updating of Page Layouts

Order Item

Save ▾ | Quick Save | Preview As... ▾ | Cancel | ⟲ Undo | ⟳ Redo | 🔲 Layout Properties

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

🔍 **Fields**

Buttons
Quick Actions
Mobile & Lightning Actions
Expanded Lookups
Related Lists
Report Charts

🔍 Quick Find | Field Name | ✖

Section	Last Modified By	Quantity Ordered
Blank Space	Order Item ID	Quantity Received
Amount	Product ID	Unit Price
Created By	Purchase Order ID	

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   Quantity Ordered   23,712
🔒 Unit Price   ₹123.45   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)

Inventory Transaction

Save ▾ | Quick Save | Preview As... ▾ | Cancel | ⟲ Undo | ⟳ Redo | 🔲 Layout Properties

Details

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🔍 **Fields**

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Related Lists
Report Charts

🔍 Quick Find | Field Name | ✖

Section	Owner	Transaction ID
Blank Space	Purchase Order ID	Transaction Type
Created By	Total Order Cost	
Last Modified By	Transaction Date	

Information (Header visible on edit only)

★ ● Transaction ID   Sample Text   Owner   Sample Text
Purchase Order ID   Sample Text
Transaction Type   Sample Text
Transaction Date   07/07/2024
🔒 Total Order Cost   ₹123.45

System Information (Header visible on edit only)

🔒 Created By   Sample Text   🔒 Last Modified By   Sample Text

---

Supplier

Save ▾ | Quick Save | Preview As... ▾ | Cancel | ⟲ Undo | ⟳ Redo | 🔲 Layout Properties

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

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Search Layouts

🔍 **Fields**

Buttons
Quick Actions
Mobile & Lightning Actions
Expanded Lookups
Related Lists
Report Charts

🔍 Quick Find | Field Name | ✖

Section	Created By	Phone Number
Blank Space	Email	Supplier ID
Address	Last Modified By	Supplier Name
Contact Person	Owner	

Information (Header visible on edit only)

★ ● Supplier ID   Sample Text   ★ ● Phone Number   1-415-555-1212
Supplier Name   Sample Text   Email   sarah.sample@company.com
Contact Person   Sample Text   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

Validation rules

Profiles

Custom App Settings

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

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

... > PERMISSION SET 'PURCHASE MANAGER CREATE ACCESS' > MANAGE ASSIGNMENT EXPIRATION
Purchase Manager Create Access

Select Users to Assign

Active Users ▼

1 item selected

	Full Name ↑	Alias	Username	Role	Active	Profile	
☐	Annapurna Gurram	AGurr	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	insightssecurity@00ddl0000058bqluaa.com		☑	Analytics Cloud Security User	▾

Cancel   Next

Flows

Triggers

Reports

Dashboards

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> 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__c9*
      ];

      // 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;
        }
      }
   }
}
```