

FIELD SERVICE WORKORDER OPTIMIZATION Report

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PROJECT ABSTRACT

The Field Service Workorder Optimization project aims to enhance the efficiency and effectiveness of managing field service operations. By implementing automated scheduling systems, the project ensures work orders are prioritized and assigned based on technician availability, skills, and proximity, thereby reducing downtime and travel time. Real-time data integration and GPS tracking provide technicians with up-to-date information and directions, facilitating seamless communication with the back office. An intuitive user interface allows technicians to easily access and update job details, while managers benefit from dashboards displaying key performance metrics. This optimization not only increases operational efficiency and reduces costs but also improves customer satisfaction by ensuring timely and high-quality service delivery. Overall, the project leverages technology and data analytics to streamline field service management, resulting in significant improvements in resource utilization and service outcomes.

INTRODUCTION

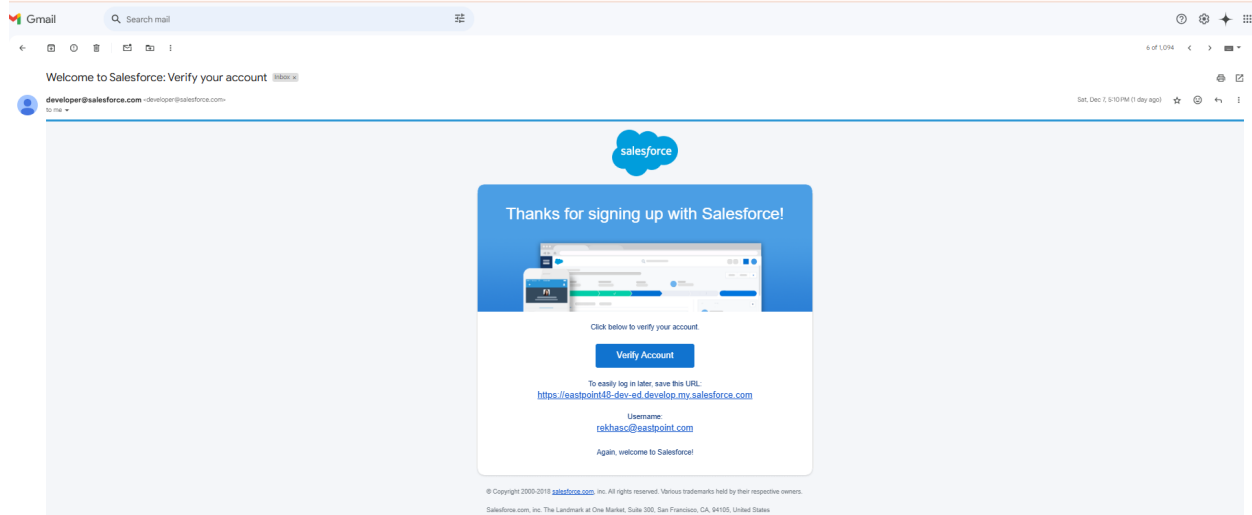
Efficient management of field service operations is crucial for organizations aiming to provide timely and high-quality service to their customers. The Field Service Workorder Optimization project addresses this need by leveraging advanced scheduling algorithms, real-time data integration, and intelligent resource allocation. In an industry where minimizing downtime, reducing travel time, and enhancing customer satisfaction are paramount, this project seeks to streamline the process of managing and executing work orders. By incorporating technology and data-driven strategies, the project aims to transform traditional field service management, ensuring optimal use of resources and improved service outcomes.

CONTENTS

S.NO	TOPIC	Pg.No
1	SalesForce · Creating Developer Account · Account Activation	4
2	Object · Create Technician Object · Create WorkOrder Object · Create Assignment Object	4-5
3	Tabs · Create a Custom Tab	6
4	The Lightning App · Create Lightning App	6-7
5	Fields & Relationships · Creating a lookup field in Assignment Object · Manage your Picklist Values · Creating Formula field in WorkOrder Object	8-9
6	Profiles · Technician Profile	10
7	Users · Create User	10
8	Apex Trigger · Create Apex Classes · Create Triggers	11-13
9	Reports & Dashboards · Create Reports · Create Dashboards	13-14

1. Salesforce

- Creating Developer Account : Created a developer organization in salesforce platform by filling all the relevant details.



1. **Account Activation** : Then I have got the mail, verified my account, and set up a password.

2.Object

- **Create Technician Object** : After downloading the given Technician spreadsheet, create custom object from spreadsheet, upload the technician.csv file and import the data as shown.
- **Create WorkOrderObject** : Same steps to be followed for work order object, here we no need to import the data as shown in the steps.
- **Create Assignment Object** : Creating a custom object with the label name as Assignment and enter the details, then save.

Create a custom object from a spreadsheet

Define object and fields

Choose the data source, map fields and their types, and import field data.

CSV File Details

Encoding Format: Values Separated By: Field Label Source: ☐ Enter manually ☒ Detect from row Field Labels Row: Import 5 rows of Data?: ☐ No, skip import ☒ Yes, Import data Record Name Field:

Fields 7 of 7 to import ☐ Hide mapped fields

IMPORT FILE FIELD NAME	SALESFORCE FIELD NAME	SALESFORCE FIELD TYPE	ADD TO LAYOUTS	FIELD PREVIEW
✓ Technician ID	Technician ID	Text	<input checked="" type="checkbox"/>	T-0001
✓ Name	Name	Text	<input checked="" type="checkbox"/>	Raghu
✓ Phone	Phone	Phone	<input checked="" type="checkbox"/>	7892341560
✓ Email	Email	Email	<input checked="" type="checkbox"/>	raghu@gmail.com
✓ Location	Location	Picklist	<input checked="" type="checkbox"/>	Hyderabad
✓ Availability	Availability	Picklist	<input checked="" type="checkbox"/>	Available
✓ Skills	Skills	Picklist	<input checked="" type="checkbox"/>	Machine Installation

Back Next

FIG 2.1: Create Technician Object

Create a custom object from a spreadsheet

Define object and fields

Choose the data source, map fields and their types, and import field data.

CSV File Details

Encoding Format: Values Separated By: Field Label Source: ☐ Enter manually ☒ Detect from row Field Labels Row: Import 2 rows of Data?: ☒ No, skip import ☐ Yes, Import data Record Name Field:

Fields 7 of 7 to import ☐ Hide mapped fields

IMPORT FILE FIELD NAME	SALESFORCE FIELD NAME	SALESFORCE FIELD TYPE	ADD TO LAYOUTS	FIELD PREVIEW
✓ WorkOrder ID	WorkOrder ID	Text	<input checked="" type="checkbox"/>	WO-[0001]
✓ Email	Email	Email	<input checked="" type="checkbox"/>	example1@workorder.com
✓ Service Type	Service Type	Text	<input checked="" type="checkbox"/>	Maintenance
✓ Description	Description	Text	<input checked="" type="checkbox"/>	
✓ Location	Location	Picklist	<input checked="" type="checkbox"/>	Pune
✓ Priority	Priority	Picklist	<input checked="" type="checkbox"/>	Low
✓ Status	Status	Picklist	<input checked="" type="checkbox"/>	Submitted

Back Next

FIG 2.2 : Create WorkOrderObject

FIG 2.3 : Create Assignment Object

Assignment

Custom Object Definition Edit

Save Save & New Cancel

Custom Object Information

The singular and plural labels are used in tabs, page layouts, and reports. Be careful when changing the name or label as it may affect existing integrations and merge templates.

Label: Example: Account

Plural Label: Example: Accounts

starts with vowel sound ☐

The Object Name is used when referencing the object via the API.

Object Name: Example: Account

Description:

Contact-Sensitive Help Setting: ☒ Open the standard Salesforce.com Help & Training window ☐ Open a window using a Visualforce page

Content Name:

Enter Record Name Label and Format

The Record Name appears in page layouts, key lists, related lists, lookups, and search results. For example, the Record Name for Account is "Account Name" and for Case it is "Case Number". Note that the Record Name field is always called "Name" when referenced via the API.

Record Name: Example: Account Name

Data Type: Warning: If you plan to insert a high volume of records in this object, via the API for example, use the Text data type.

Display Format: Example: A-[0000] What is This?

3.Tabs

Creating a Custom Tab : Select the Tabs option in Quick find box and create new tab named Assignment

The screenshot shows the 'Edit Custom Object Tab' page for 'Assignments'. The page title is 'Assignments'. Below the title, it says 'Fill in the fields below to define the custom tab.' The 'Custom Tab Definition Edit' section contains the following fields:

- Custom Object Tab Information:** A red bar indicates 'Required Information'.
- Tab Label:** Assignments
- Object:** Assignment
- Tab Style:** Cell phone (with a search icon)
- Splash Page Custom Link:** --None-- (dropdown menu)
- Description:** A text area for entering a short description.

Below the 'Custom Tab Definition Edit' section, there is a 'Custom Tabs' section. It contains a table of 'Custom Object Tabs' and a 'Web Tabs' section.

Action	Label	Tab Style	Description
Edit Del	Assignments	Airplane	
Edit Del	Technician - Technician	Box	
Edit Del	Work Order ID	Box	

The 'Web Tabs' section shows 'No Web Tabs have been defined'.

By default, Technician and WorkOrder tabs will be created once the custom object is created.

4. The Lightning App

1. **Create a Lightning App :** Again, in quick find box, go to app manager and create new lightning app with the name of project and some further details.
 - a. Add Navigation Items (i.e, Home, WorkOrder, Assignments, Technician, Reports and Dashboards)

- b. Add User Profile(i.e, System Administrator)
- c. Then click save and finish

App Details & Branding

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

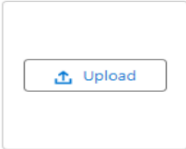
App Details


* App Name ⓘ
Field Service WorkOrder Optimization

* Developer Name ⓘ
Field_Service_WorkOrder_Optimization

Description ⓘ
Give a meaningful description
Image

App Branding

Image ⓘ



Primary Color Hex Value ⓘ
 #0070D2

Org Theme Options
☐ Use the app's image and color instead of the org's custom theme

FIG 4.1: Create LightningApp

Navigation Items

Choose the items to include in the app, and arrange the order in which they appear. Users can personalize the navigation to add or move items, but users can't remove or rename the items that you add. Some navigation items are available only for phone or only for desktop. These items are dropped from the navigation bar when the app is viewed in a format that the item doesn't support.

Available Items ⓘ  Create ▼

Type to filter list...

- Accounts
- All Sites
- Alternative Payment Methods
- Analytics
- App Launcher
- Appointment Categories
- Appointment Invitations
- Annual Requests

Selected Items

- Home
- WorkOrder
- Assignments
- Technician
- Reports
- Dashboards

FIG 4.2 : Add Navigation Items

User Profiles

Choose the user profiles that can access this app.

Available Profiles

Analytics Cloud Integration User

Analytics Cloud Security User

Authenticated Website

Selected Profiles

System Administrator

FIG 4.3 Add User Profile

5. Fields & Relationships

Creating Lookup Field In Assignment Object : In Assignment go to Fields& Relationships and createa new field labeled as WorkOrder and datatype as Lookup

eastpoint48-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IWU0000022cXt/FieldsAndRelationships/00NWU000006Q1mb/view

Search Setup

Setup Home Object Manager

SETUP > OBJECT MANAGER

Assignment

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Assignment Custom Field

Work Order ID

[Back to Assignment](#)

Validation Rules [0]

Custom Field Definition Detail [Edit](#) [Set Field-Level Security](#) [View Field Accessibility](#) [Where is this used?](#)

Field Information	
Field Label	Work Order ID
Field Name	Work_Order_ID
API Name	Work_Order_ID__c
Description	
Help Text	
Data Owner	
Field Usage	
Data Sensitivity Level	
Compliance Categorization	
Created By	Rekha S.C., 07/12/2024, 5:39 pm
Modified By	Rekha S.C., 07/12/2024, 5:39 pm

Object Name Assignment

Data Type Lookup

Manage your Picklist Values: In ObjectManager select WorkOrder object go to fields &relationships. In that location field add new values (i.e,Nasik, Warangal, Nanded).

eastpoint48-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IWU0000022dLt/FieldsAndRelationships/00NWU000006Q1uk/view

Search Setup

Setup Home Object Manager

SETUP > OBJECT MANAGER

Work Order ID

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Validation Rules [New](#) [Validation Rules Help](#)

No validation rules defined.

Values [New](#) [Reorder](#) [Replace](#) [Printable View](#) [Chart Colors](#) [Values Help](#)

[Delete Selected](#) [Deactivate Selected](#) [Replace Selected](#)

Action	Values	API Name	Default	Chart Colors	Modified By
<input type="checkbox"/> Edit Del Deactivate	Value1	Value1	<input type="checkbox"/>	Assigned dynamically	Rekha S.C., 07/12/2024, 5:59 pm
<input type="checkbox"/> Edit Del Deactivate	Nasik	Nasik	<input type="checkbox"/>	Assigned dynamically	Rekha S.C., 07/12/2024, 6:06 pm
<input type="checkbox"/> Edit Del Deactivate	Warangal	Warangal	<input type="checkbox"/>	Assigned dynamically	Rekha S.C., 07/12/2024, 6:06 pm
<input type="checkbox"/> Edit Del Deactivate	Nanded	Nanded	<input type="checkbox"/>	Assigned dynamically	Rekha S.C., 07/12/2024, 6:06 pm

Inactive Values [Delete Unused Values](#) [Inactive Values Help](#)

No Inactive Values values defined.

[Back To Top](#) Always show me [more](#) records per related list

Add more values in the fields of priority(i.e, High) and Servicetype(i.e, Hardware repair,Troubleshoot/Debugging, Lane-Management).

Creating Formula Field in WorkOrder Object:Now create a Formula Datatypeand givethe field label as "date". The formula is "CreateDate".

eastpoint48-dev-ed.develop.lightning.force.com/lightning/setup/ObjectManager/01IWU0000022cXt/FieldsAndRelationships/00NWU000006Q3TR/view

Search Setup

Setup Home Object Manager

SETUP > OBJECT MANAGER

Assignment

Details

Fields & Relationships

Page Layouts

Lightning Record Pages

Buttons, Links, and Actions

Compact Layouts

Field Sets

Object Limits

Record Types

Related Lookup Filters

Custom Field Definition Detail [Edit](#) [Set Field-Level Security](#) [View Field Accessibility](#) [Where is this used?](#)

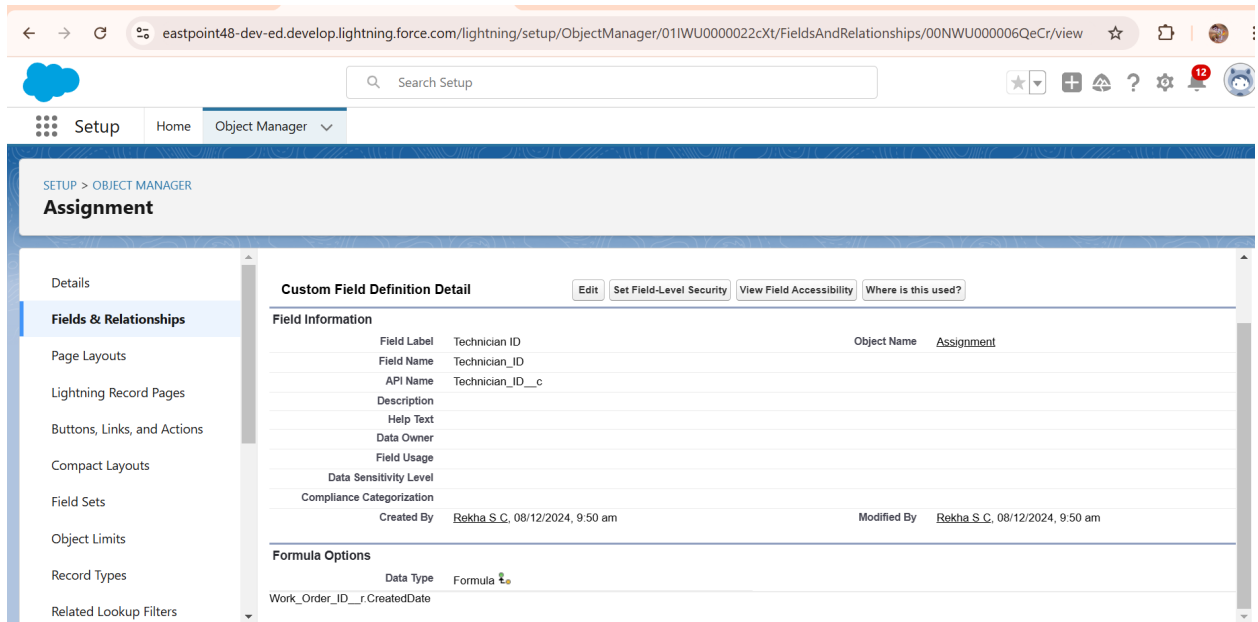
Field Information

Field Label	Date	Object Name	Assignment
Field Name	Date		
API Name	Date__c		
Description			
Help Text			
Data Owner			
Field Usage			
Data Sensitivity Level			
Compliance Categorization			
Created By	Rekha S.C., 07/12/2024, 6:20 pm	Modified By	Rekha S.C., 07/12/2024, 6:20 pm

Formula Options

Data Type	Formula
CreateDate	

Now, in the Assignment object, create a Formula Datatypein Fields &relationships. Add Technician ID with return type Date.

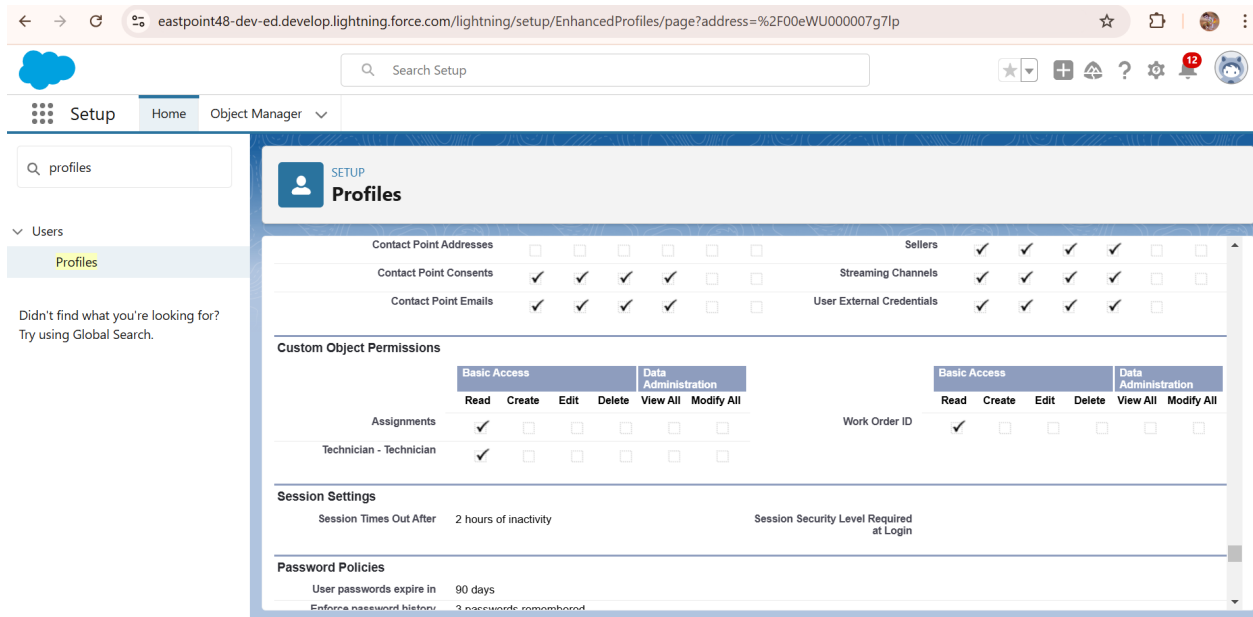


Add Assignment Date with Formulawith return type date(WorkOrder_ID_r.Date_c).

Add Completion Date with Formula with return type date " IF(ISPICKVAL(WorkOrder_ID_r.Status_c , 'Resolved'), WorkOrder_ID_r.LastModifiedDate ,NULL)"

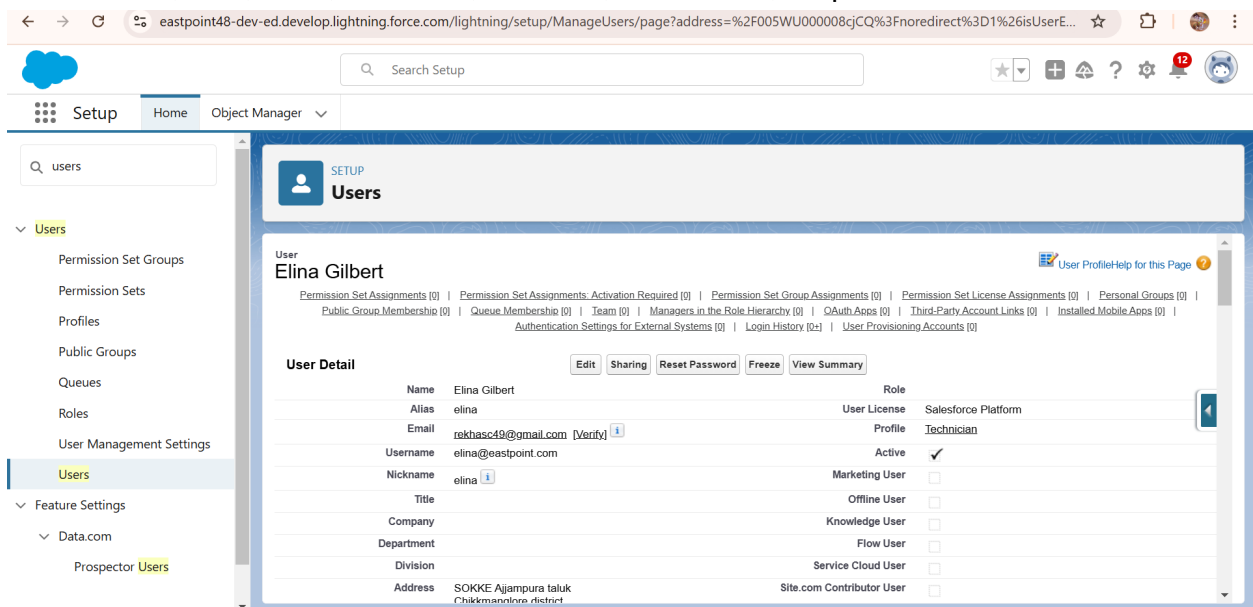
6.Profiles

Technician Profile : To create a new profile in Salesforce, navigate to Setup, type "Profiles" in the Quick Find box, and select "Profiles." Click "New Profile," choose "Standard Platform User" as the existing profile, name it "Technician," and click "Save." On the profile page, click "Edit." Scroll to Custom Object Permissions and grant Read- only access for Technician, WorkOrder, and Assignment objects, then click "Save." On the profile detail page, scroll to Custom Field-Level Security, click "View" next to the WorkOrder object, then "Edit." Enable the checkbox for the Status field and click "Save."



7.Users

Create User : Go to User and create a new one with new name and other details such as last-name, alias, email, username, nickname, user license, and profiles.



8.Apex Trigger

Create Apex Class : To create a new Apex Class in Salesforce, go to Setup, click

the gear icon, and select "Developer Console." The Developer Console will open in a new window. Click on "File," then "New," and select "Apex Class." Name the class "WorkOrderClass" and click "OK."

Create Apex Trigger : To create a new Apex Trigger in Salesforce, open the Developer Console, click on "File," then "New," and select "Apex Trigger." Name the trigger "WorkOrderTrigger" and select "WorkOrder c" from the sObject dropdown. Click "Submit" to create the trigger.

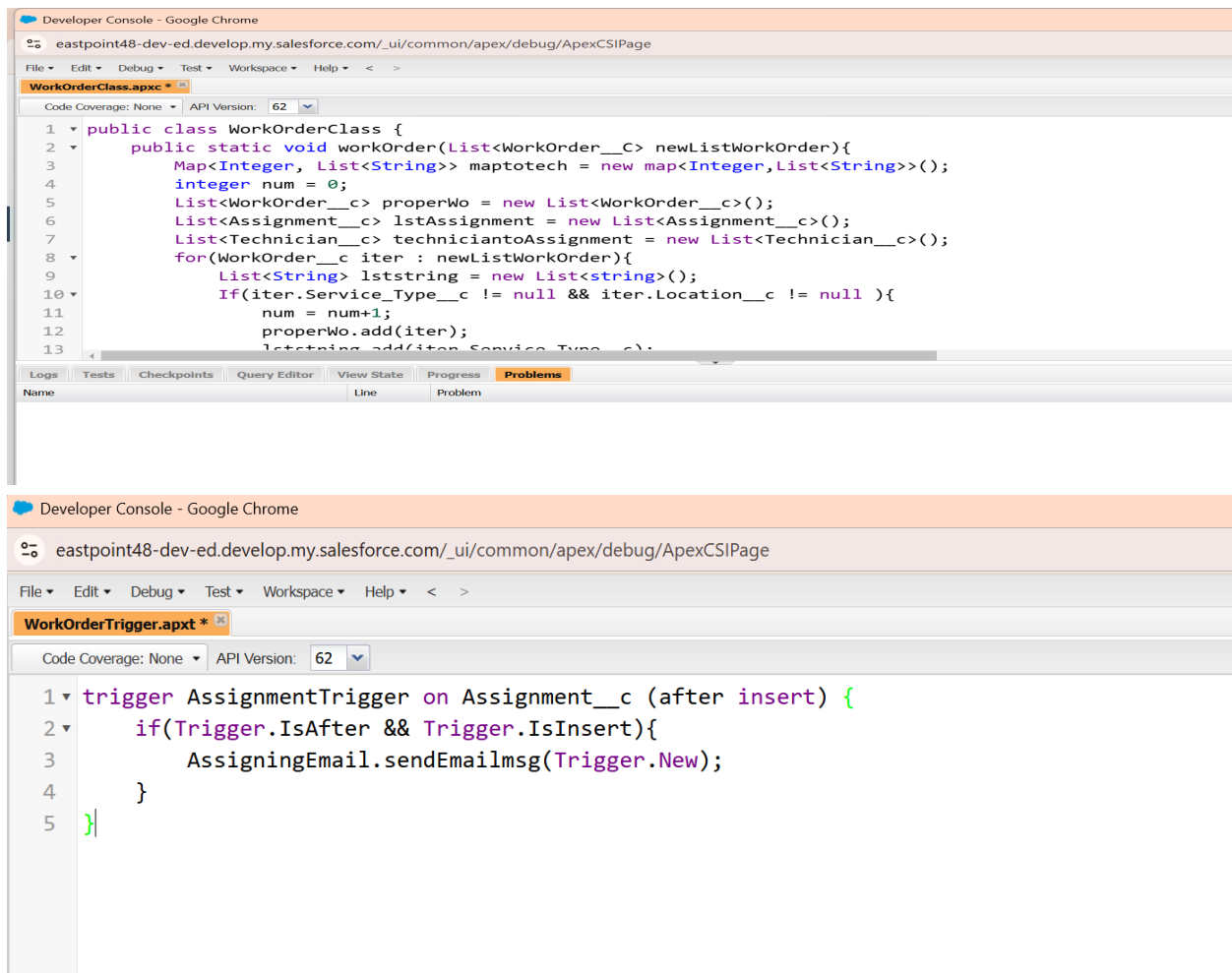


FIG 8.1 WorkOrder Apex Class and Trigger Code

Create Apex Class : To create a new Apex Class in Salesforce, go to Setup, click the gear icon, and select "Developer Console." The Developer Console will open in a new window. Click on "File," then "New," and select "Apex Class." Name the class "AssigningEmail" and click "OK."

Create Apex Trigger : To create a new Apex Trigger in Salesforce, open the Developer Console, click on "File," then "New," and select "Apex Trigger." Name the trigger "AssignmentTrigger" and select "WorkOrder c" from the sObject dropdown. Click "Submit" to create the trigger.

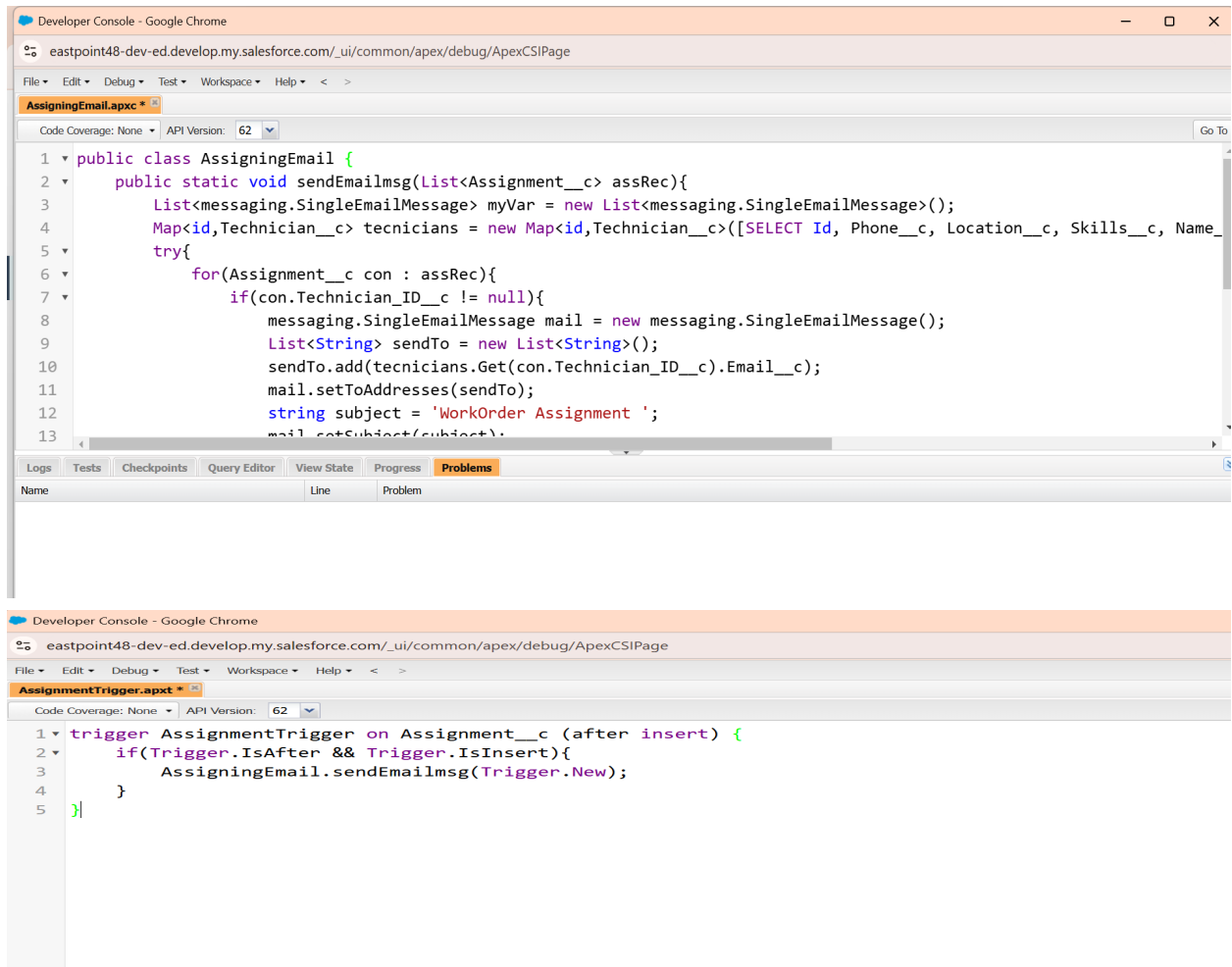


FIG 8.2 Assignment Apex Class and Trigger Code

Create Apex Class : To create a new Apex Class in Salesforce, go to Setup, click the gear icon, and select "Developer Console." The Developer Console will open in a new window. Click on "File," then "New," and select "Apex Class." Name the class "CompletionMail" and click "OK".

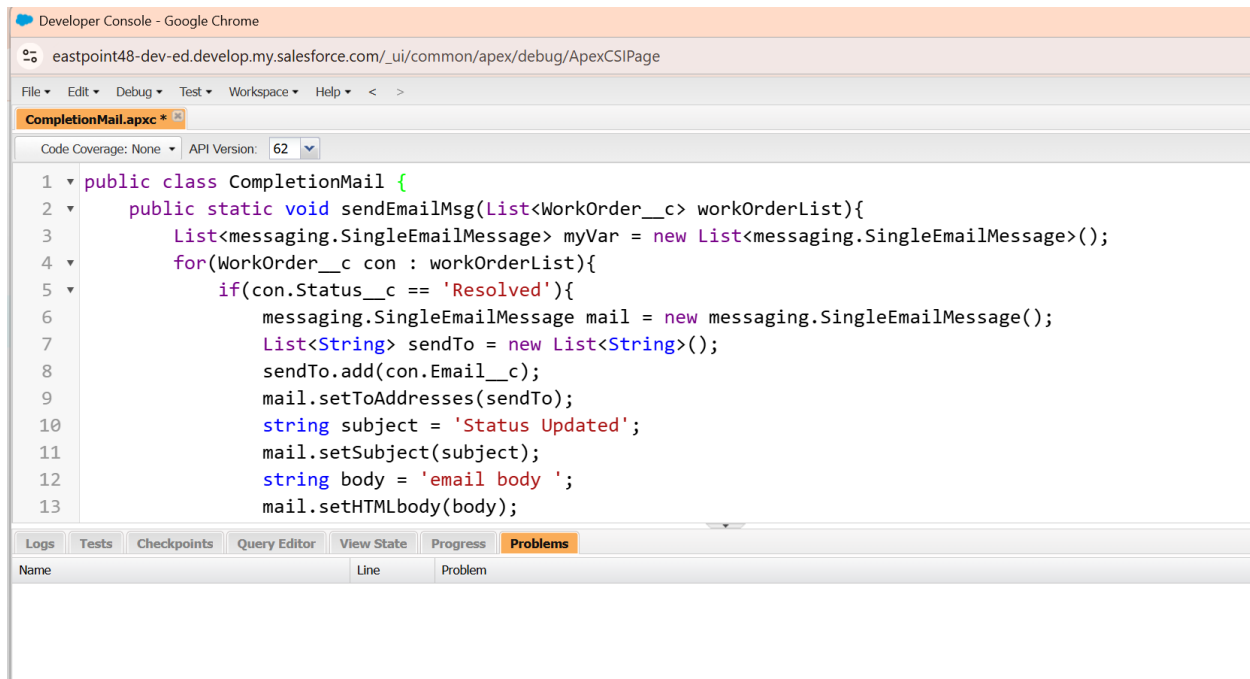


FIG 8.3 Completion Apex Class Code

Create an Asynchronous Apex Class : To create a new Apex Class in Salesforce, go to Setup, click the gear icon, and select "Developer Console." The Developer Console will open in a new window. Click on "File," then "New," and select "Apex Class." Name the class "Record Deletion" and click "OK."

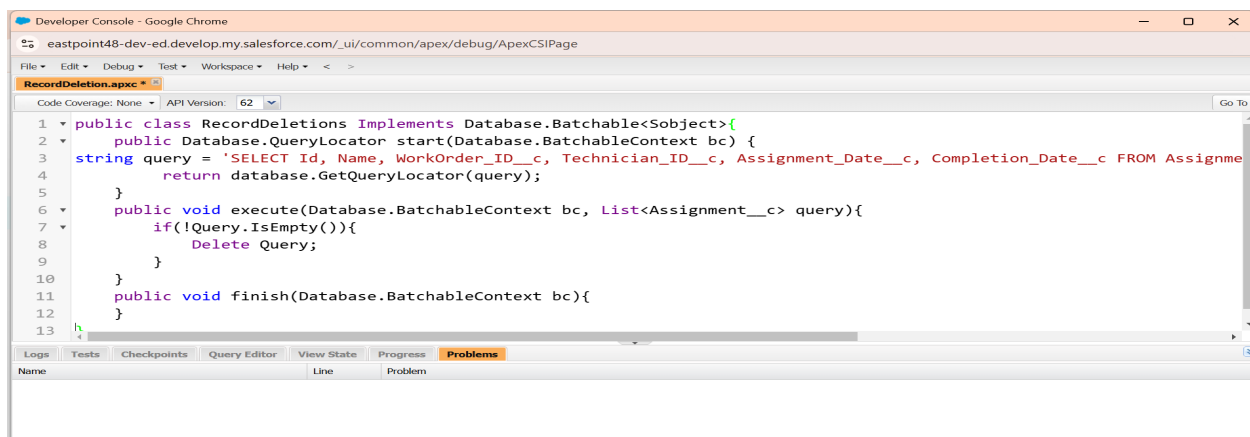
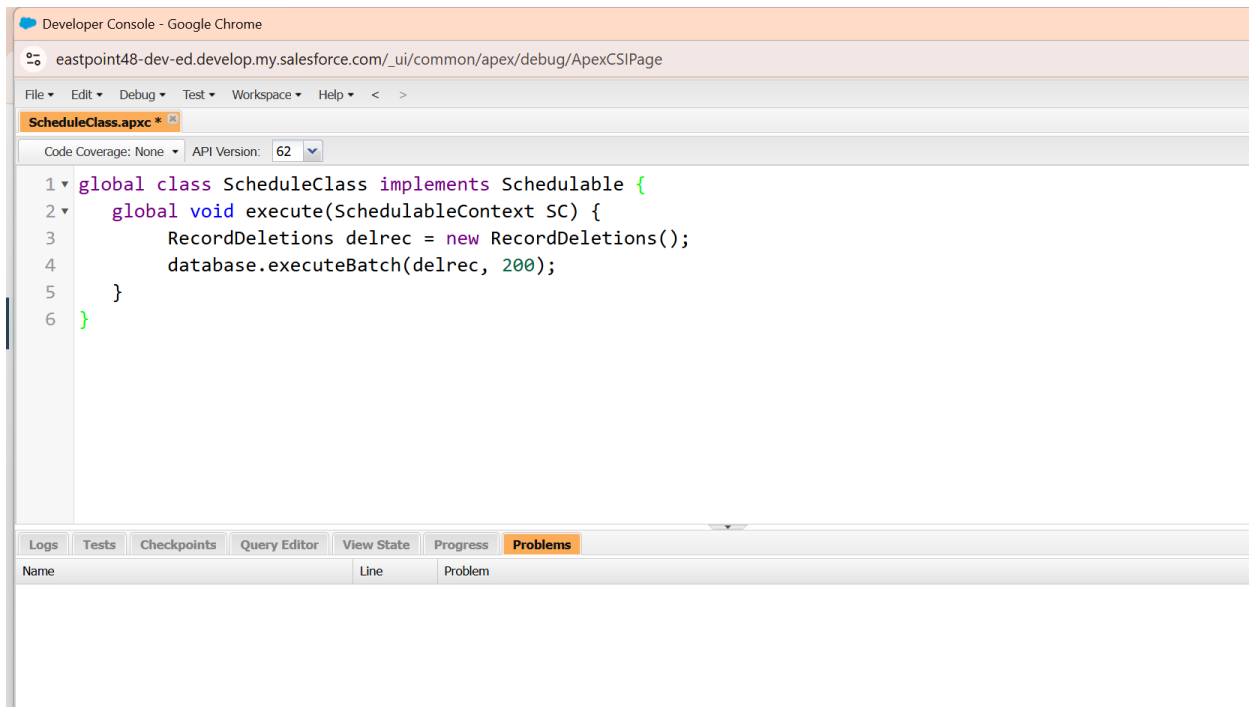


FIG 8.4 RECORD DELETION APEX CLASS CODE

Create an Apex Schedule Class : To create a new Apex Class in Salesforce, go to Setup, click the gear icon, and select "Developer Console." The Developer Console will open in a new window. Click on "File," then "New," and select "Apex Class." Name the class "Schedule" and click "OK."



The screenshot shows the Salesforce Developer Console in Google Chrome. The browser address bar displays the URL: eastpoint48-dev-ed.develop.my.salesforce.com/_ui/common/apex/debug/ApexCSIPage. The console title bar indicates the file is 'ScheduleClass.apxc'. Below the title bar, there are tabs for 'Code Coverage: None' and 'API Version: 62'. The main editor area contains the following Apex code:

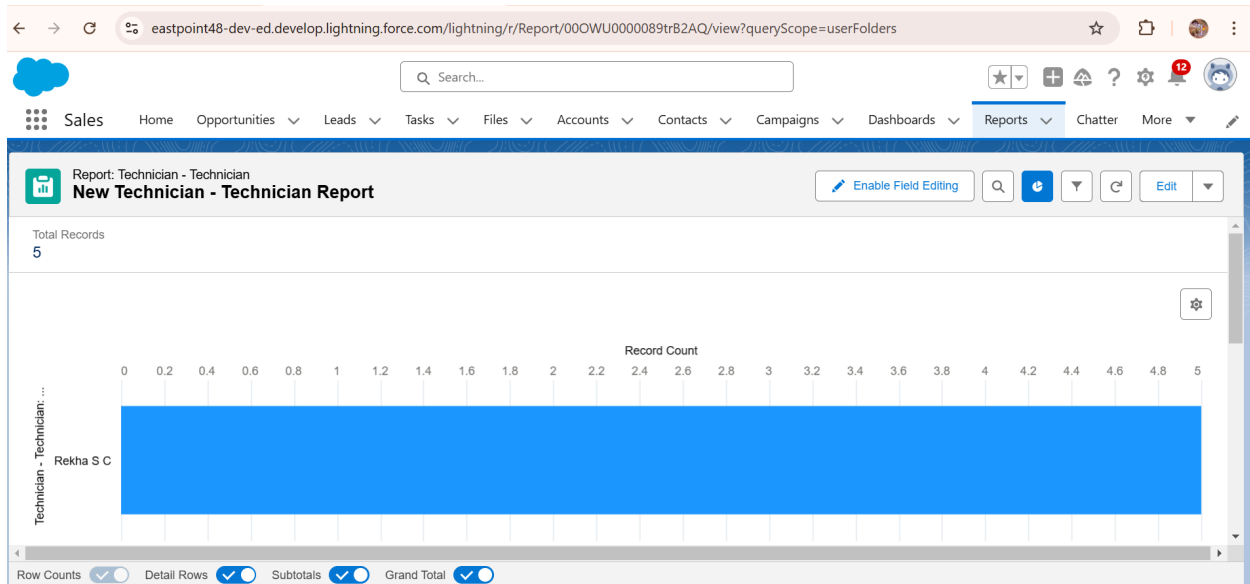
```
1 global class ScheduleClass implements Schedulable {  
2     global void execute(SchedulableContext SC) {  
3         RecordDeletions delrec = new RecordDeletions();  
4         database.executeBatch(delrec, 200);  
5     }  
6 }
```

At the bottom of the console, there is a tabbed interface with 'Logs', 'Tests', 'Checkpoints', 'Query Editor', 'View State', 'Progress', and 'Problems'. The 'Problems' tab is currently selected, showing a table with columns 'Name', 'Line', and 'Problem'.

Create A Schedule Apex : To schedule an Apex class in Salesforce, go to Setup and search for “Apex Classes” in the Quick Find box. Click on “Schedule Apex.” Enter the Job Name as "DeleteAssignmentSchedule," select "ScheduleClass" using the lookup icon for the Apex Class, set the Frequency to "Monthly," and choose a Preferred Start Time. Save the schedule to automate the Apex class execution.

9. Reports & Dashboards

Create Reports : To create a new report in Salesforce, go to the app and click on the Reports tab. Click "New Report." Select the report type from the category, report type panel, or search panel, then click "Start Report." Customize your report by adding fields from the left pane. Group the report by Work Order ID for better organization. Save and run the report to view the results.



Create Dashboards : To create a dashboard in Salesforce, go to the app and click on the Dashboards tab. Click "New Dashboard," give it a name, and click "Create." Select "Add Component," choose the report you created previously, and click "Select." Click "Add," then "Save," and finally, click "Done" to complete the dashboard setup.

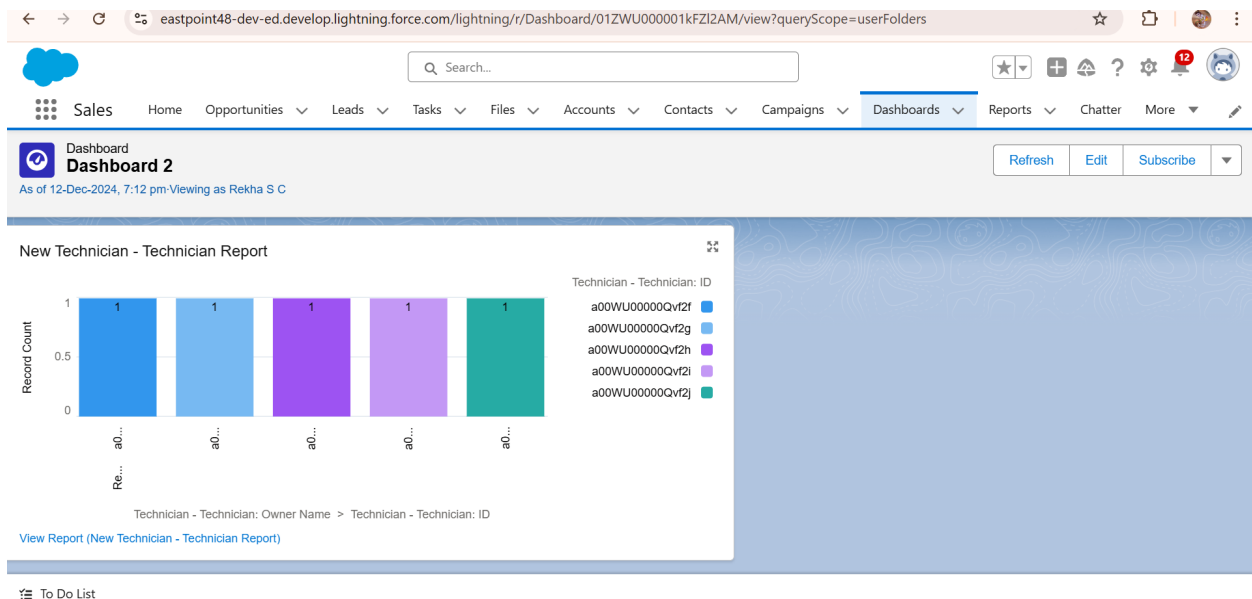


FIG 9.1 Technician and Assignment Details Report Dashboard