

PROJECT TITLE

A CRM APPLICATION TO ENGINEERING WORKS

College Name: **TAMILNADU COLLEGE OF ENGINEERING**

Code: **7142**

Department of Computer Science and Engineering

Team Leader:

Name: Mohamed Faizul R

Reg No: 714221104026

Team Members:

Name: Muniasamy A

Reg No: 714221104303

Name: Venkadesh K

Reg No: 714221104056

Name: Saran C M

Reg No: 714221104305

Registered Email Id: mdfaizulrahuman@gmail.com

TrailheadUrl: <https://mailamengineeringcolleg-5d5-dev-ed.develop.lightning.force.com/lightning/setup/SetupOneHome/home>

A CRM Application for Engineering Works

1. Project Overview

The CRM Application for Engineering Works project is designed to address the challenges of managing client information, material requirements, and engineering workflows in a structured and efficient manner. The application aims to streamline the operations of engineering services, including fabrication, shed construction, and pipe lining, by integrating data management, process tracking, and automated calculations into a single platform.

The primary objective is to automate the computation of project costs based on the materials and measurements provided and to ensure accurate tracking of workflows, such as drilling, welding, cutting, and folding. By leveraging advanced technologies, this CRM system enhances operational efficiency, improves data accuracy, and ensures better project tracking for timely execution.

The project delivers a user-friendly interface that simplifies data entry, automates repetitive tasks, and provides actionable insights through detailed reporting. It aims to elevate client satisfaction by ensuring transparency, efficiency, and a seamless project management experience.

This solution ultimately supports the long-term goals of engineering

businesses by reducing manual errors, optimizing resource allocation, and improving overall productivity.

2. Objectives

The primary objective of the CRM Application for Engineering Works project is to develop an efficient system that:

- **Streamlines Client Information Management:**
 - Centralizes the storage and management of client, company, and contact details.
- **Automates Cost Estimation:**
 - Provides an accurate and automated price calculation feature based on materials and measurements.
- **Enhances Workflow Management:**
 - Tracks and manages engineering processes such as fabrication, shed construction, and pipe lining with detailed status updates.
- **Optimizes Material Usage:**
 - Tracks material requirements and usage, reducing wastage and ensuring proper inventory control.
- **Improves Operational Efficiency:**
 - Automates repetitive tasks to save time and reduce human errors in project management.
- **Delivers Actionable Insights:**
 - Offers detailed reporting and analytics for better decision-making and resource allocation.
- **Increases Client Satisfaction:**
 - Ensures transparent, accurate, and timely project execution to meet client needs effectively.

These objectives align with the broader goal of enabling engineering businesses to enhance productivity, streamline operations, and deliver

better outcomes to their clients.

3. Salesforce Key Features and Concepts Utilized

❖ Custom Objects and Fields:

- Created custom objects to manage client information, project details, and engineering workflows.
- Defined fields for material specifications, measurements, and price calculations.

❖ Process Automation:

- Implemented Flow Builder to automate workflows, such as project status updates and material usage tracking.
- Used Apex Triggers to handle complex automation scenarios, including automated price computation.

❖ Validation Rules:

- Applied validation rules to ensure accurate data entry for measurements, materials, and client details.

❖ Reports and Dashboards:

- Developed custom dashboards to visualize project progress, material inventory, and client interaction data.
- Created detailed reports for operational insights and decision-making.

❖ Lightning Components:

- Utilized Salesforce Lightning components for an intuitive and dynamic user interface.
- Enhanced user experience by integrating drag-and-drop functionality and visual process tracking.

❖ **Data Security and Sharing:**

- Configured role-based access controls to ensure sensitive data, such as client information and pricing, is securely managed.

❖ **Approval Processes:**

- Integrated approval workflows for project plans and material usage to streamline internal processes.

❖ **Chatter Collaboration:**

- Enabled real-time collaboration among team members using Salesforce Chatter for project updates and discussions.

❖ **Mobile Accessibility:**

- Configured Salesforce Mobile App for on-the-go access to project data and client interactions.

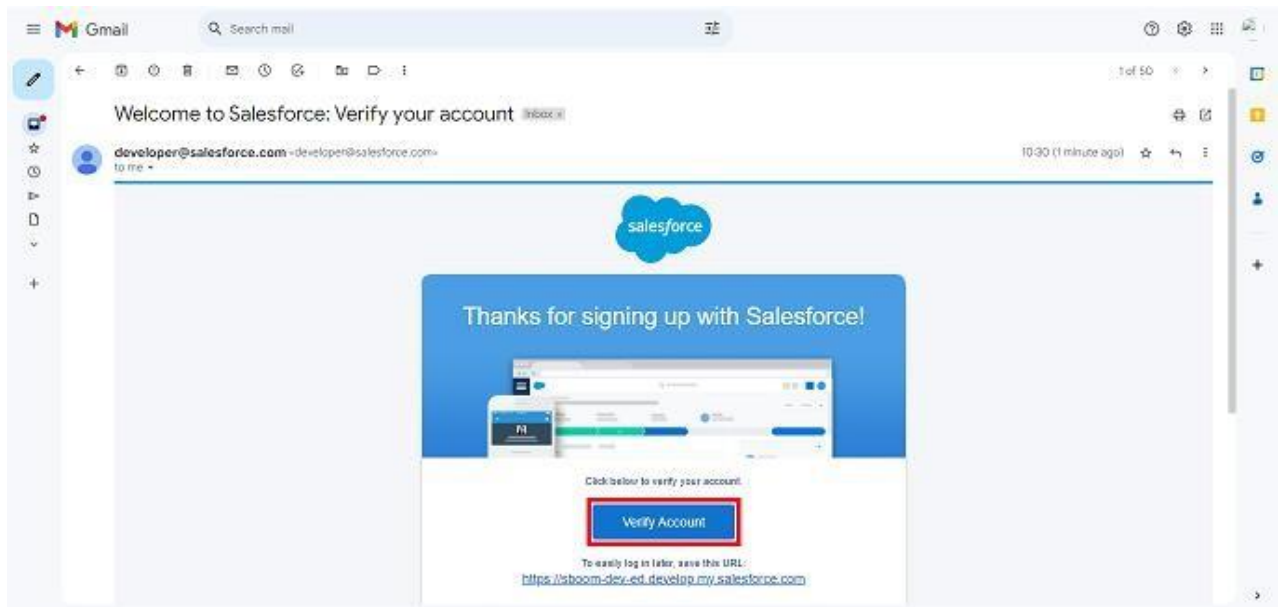
❖ **Integration with Third-Party Tools:**

- Integrated with external systems for inventory management and accounting to provide a seamless experience.
- These Salesforce features ensure a robust, efficient, and user-friendly CRM solution tailored for managing engineering works.

4. Detailed Steps to Solution Design

Step 1: Creating Developer Account and Activation

- Creating a developer org in salesforce.
 - ✓ To Activate the account, click on the verify account. Give a password and answer a security question and click on change password.
 - ✓ Give a password and answer a security question and click on change password. Then you will redirect to your salesforce setup page.



Step 2: Create Custom Objects

- ✓ Navigate to **Setup > Object Manager > Create > Custom Object**.
- ✓ Create the following objects:
 1. **Fabrication Object**
 2. **Shed-Work Object**

3. Pipe Lining Object

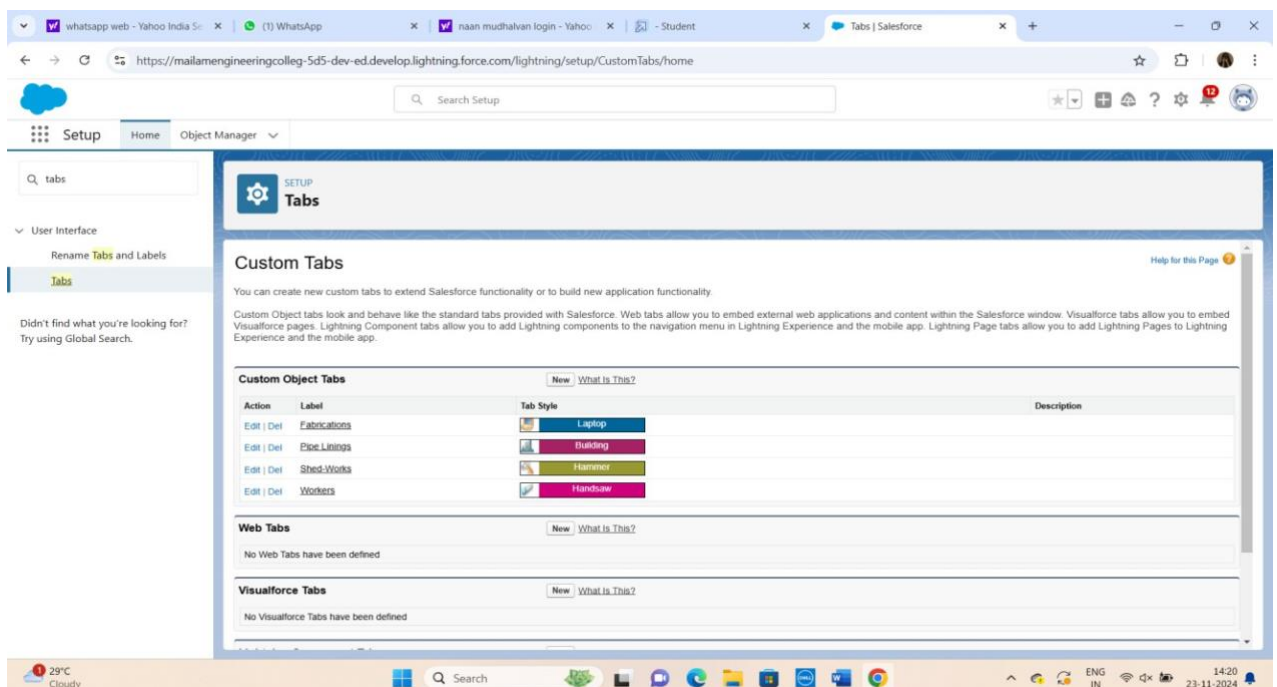
4. Worker Object

- ✓ Define labels, plural labels, record name format, and data type for each object.



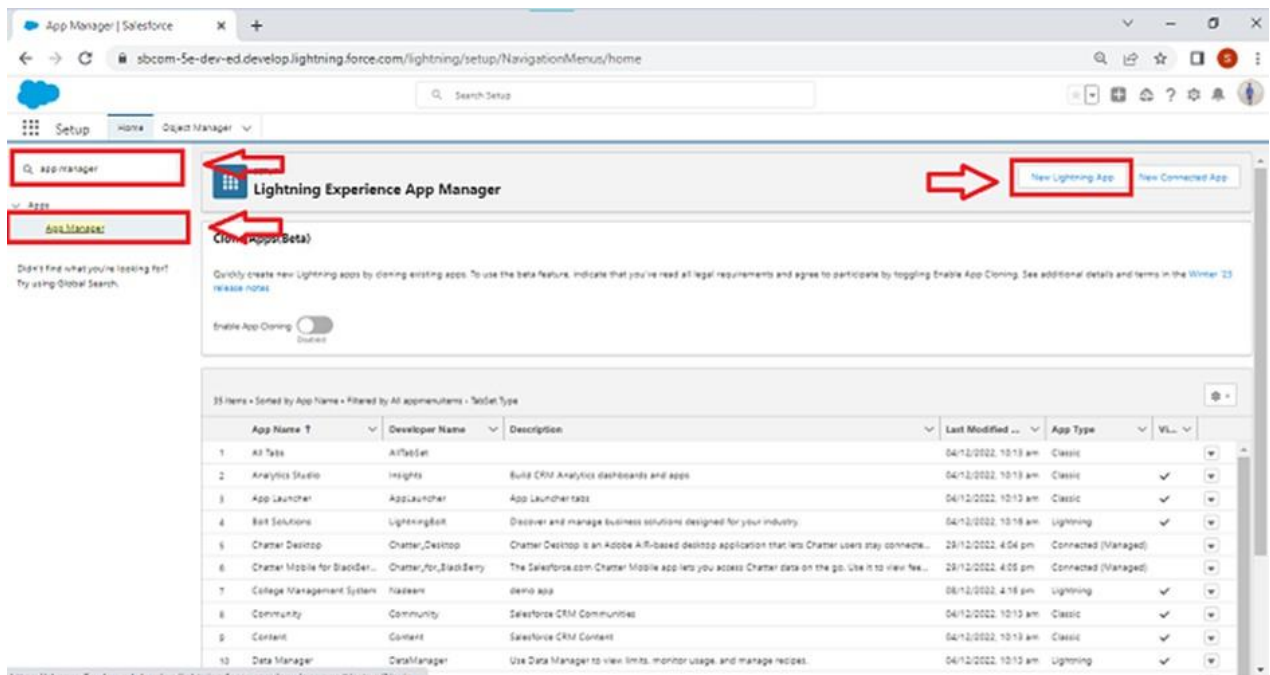
Step 3: Create Custom Tabs

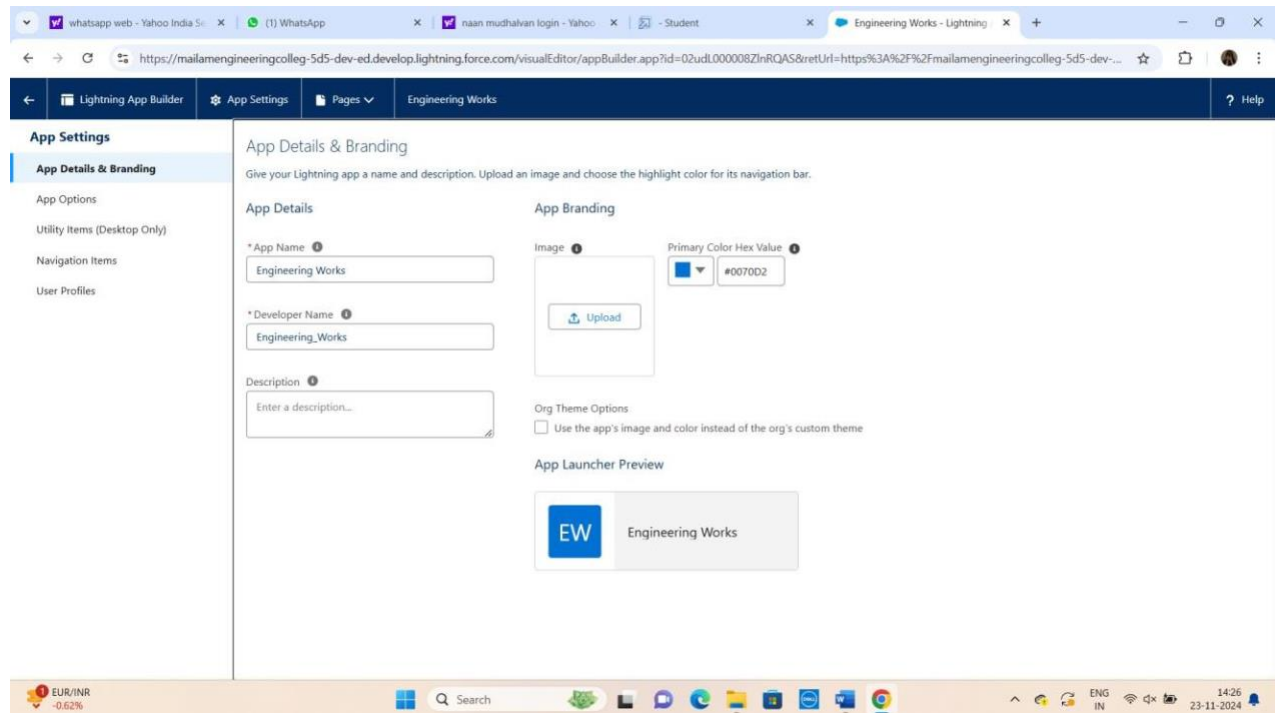
- ✓ Tabs allow users to view and create records for your objects.
- ✓ Go to **Setup > Quick Find > Tabs > New (Custom Tab)**.
- ✓ Select an object and choose a tab style.
- ✓ Ensure "Append tab to users' existing personal customizations" is checked.
- ✓ Save your changes.



Step 4: Create a Lightning App

- ✓ Apps group related items and functionalities.
- ✓ Create a Lightning App named "**Engineering Works**":
 - Navigate to **Setup > App Manager > New Lightning App**.
 - Follow the wizard to configure your app.





The screenshot shows the 'App Settings' page in the Lightning App Builder. The 'App Details & Branding' section is active. It includes fields for 'App Name' (Engineering Works), 'Developer Name' (Engineering_Works), and 'Description'. The 'App Branding' section shows an 'Image' upload button and a 'Primary Color Hex Value' of #007002. There is also an 'Org Theme Options' checkbox and an 'App Launcher Preview' showing the 'EW' icon and 'Engineering Works' text.

Step 5: Create Fields

- ✓ Add custom fields for each object.
- ✓ Example fields for the **Fabrication Object**:
 1. **Name of the Owner**
 - Field Name: Name_of_the_Owner
 - Data Type: Text (Length: 125)
 2. **Name of the Company**
 - Field Name: Name_of_Company
- ✓ Repeat for other objects.

Step 6: Page Layouts

- ✓ Create page layouts to customize the object UI.
- ✓ For the Fabrication Object, create:
 1. Drilling Page Layout
 2. Welding Page Layout
 3. Cutting Page Layout
 4. Folding Page Layout
- ✓ Assign appropriate fields to each layout:
 - Go to **Setup > Object Manager > Fabrication > Page Layouts > New.**

- Drag and arrange fields as required.

Setup > OBJECT MANAGER
Fabrication

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
Scoping Rules

Save Quick Save Preview As... Cancel Undo Redo Layout Properties

Quick Find Field Name

Section	Breadth	Email	Length	Owner
Blank Space	Cost per Meter	Fabrication Name	Material Type	Quantity
Amount	Created By	Final Price	Name of Company	Record Type
Area	Cutting Type	Last Modified By	Name of the Owner	Width

Company Details

Name of Company	Sample Text	Name of the Owner	Sample Text
Email	sarah.sample@company.com		

Fields (Header not visible)

Field Name	Sample Text	Area	Cost per Meter	Quantity	Amount
Fabrication Name	Sample Text	396.04	13.110	652.21	₹123.45
Length	576.56				
Breadth	419.55				
Width	695.87				
Material Type	Sample Text				

Final Amount

Final Price	₹123.45

Custom Links (Header visible on detail only)

Mobile Cards (Salesforce mobile app)

Setup > OBJECT MANAGER
Fabrication

Details
Fields & Relationships
Page Layouts
Lightning Record Pages
Buttons, Links, and Actions
Compact Layouts
Field Sets
Object Limits
Record Types
Related Lookup Filters
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Scoping Rules

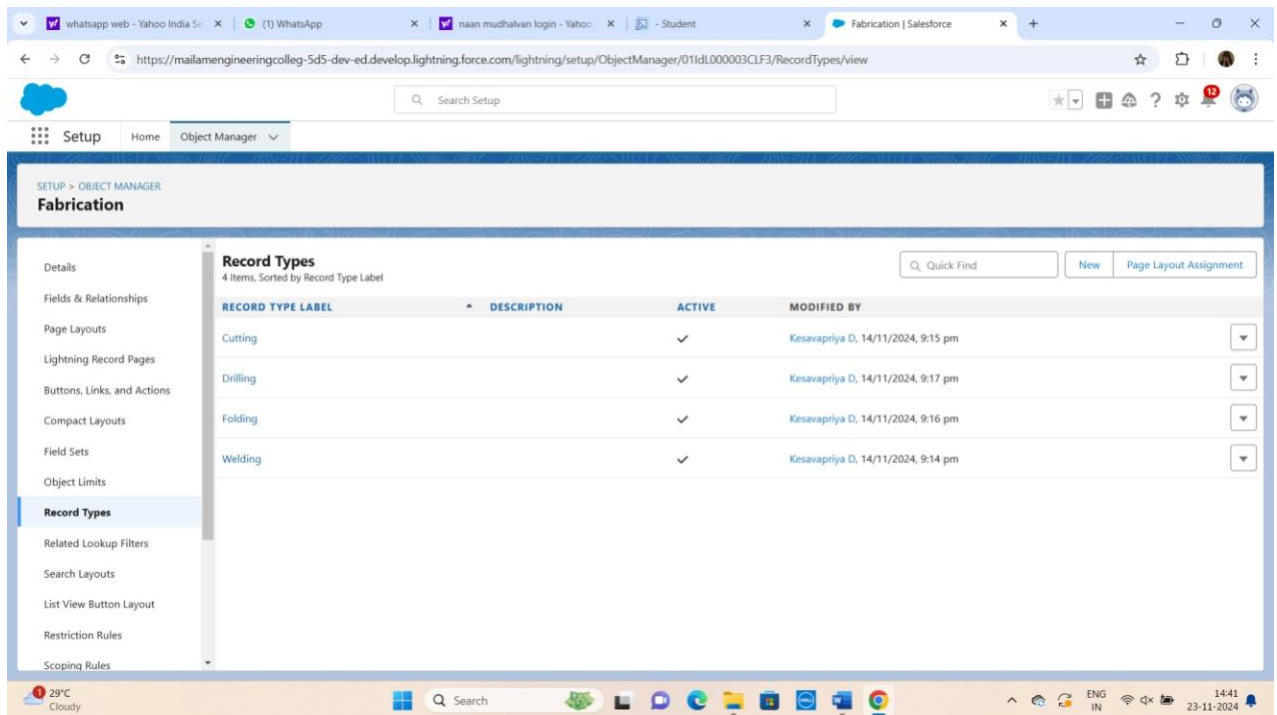
Quick Find New Page Layout Assignment

5 Items, Sorted by Page Layout Name

PAGE LAYOUT NAME	CREATED BY	MODIFIED BY
Cutting Page Layout	Kesavapriya D, 14/11/2024, 7:40 pm	Kesavapriya D, 14/11/2024, 9:06 pm
Drilling Page Layout	Kesavapriya D, 13/11/2024, 12:44 am	Kesavapriya D, 14/11/2024, 9:01 pm
Fabrication Layout	Kesavapriya D, 12/11/2024, 10:40 pm	Kesavapriya D, 14/11/2024, 8:51 pm
Folding Page Layout	Kesavapriya D, 14/11/2024, 9:07 pm	Kesavapriya D, 14/11/2024, 9:09 pm
Welding Page Layout	Kesavapriya D, 14/11/2024, 7:36 pm	Kesavapriya D, 14/11/2024, 9:05 pm

Step 7: Record Types

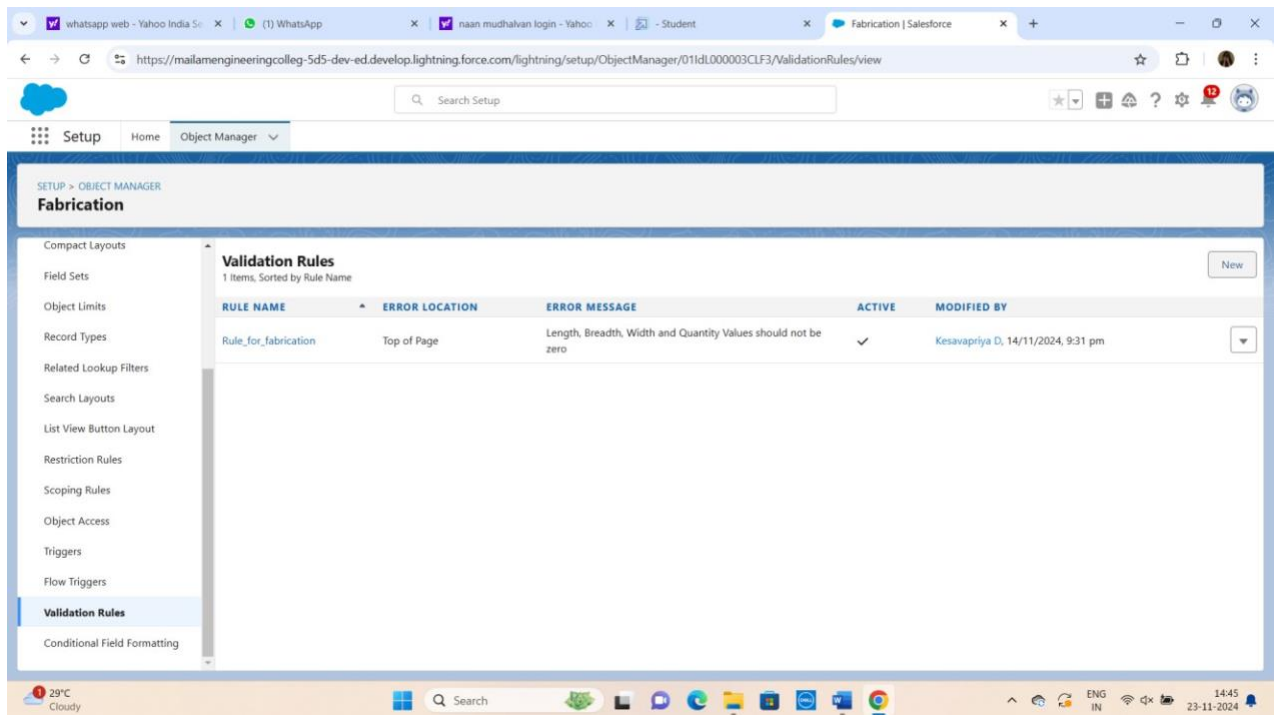
- ✓ Create record types for specific functionalities.
- ✓ For the Fabrication Object:
 - Navigate to **Setup > Object Manager > Fabrication > Record Types**.
 - Create record types like **Drilling, Welding, Cutting, Folding**.
 - Assign appropriate page layouts to each record type.



Step 8: Validation Rules

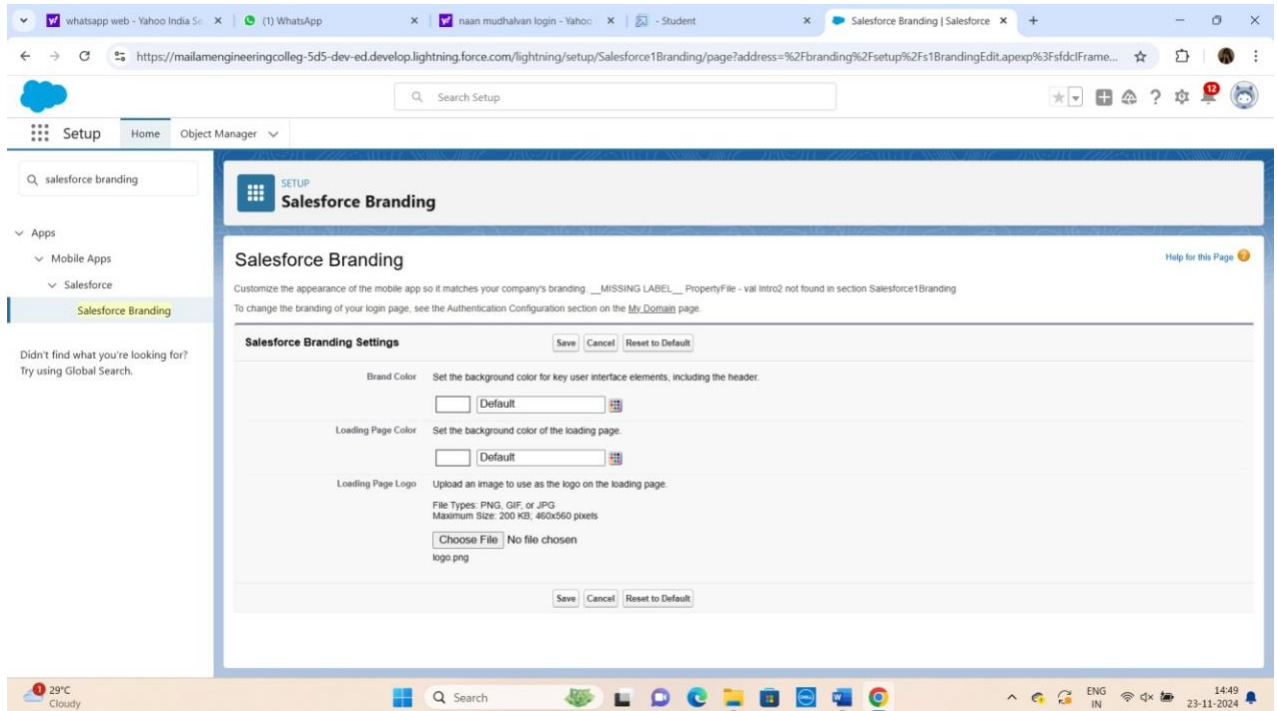
- ✓ Enforce data integrity with validation rules.
- ✓ For the Fabrication Object:
 - Navigate to **Setup > Object Manager > Fabrication > Validation Rules > New**.
 - Rule Name: *Rule_for_Fabrication*

- Formula: $OR(Length_c == 0, Breadth_c == 0, Width_c == 0, Quantity == 0)$
- ✓ Error Message: "Length, Breadth, Width, and Quantity values should not be zero."
- ✓ Save the rule.

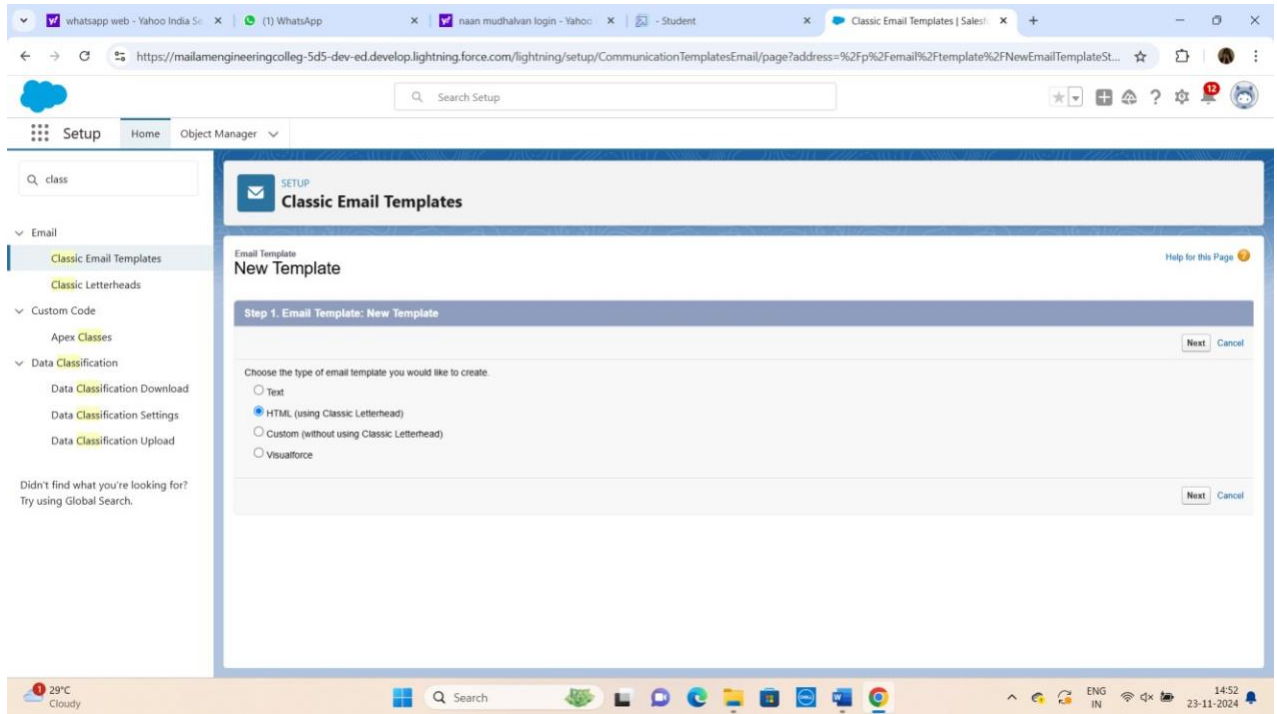


Step 9: Email Templates

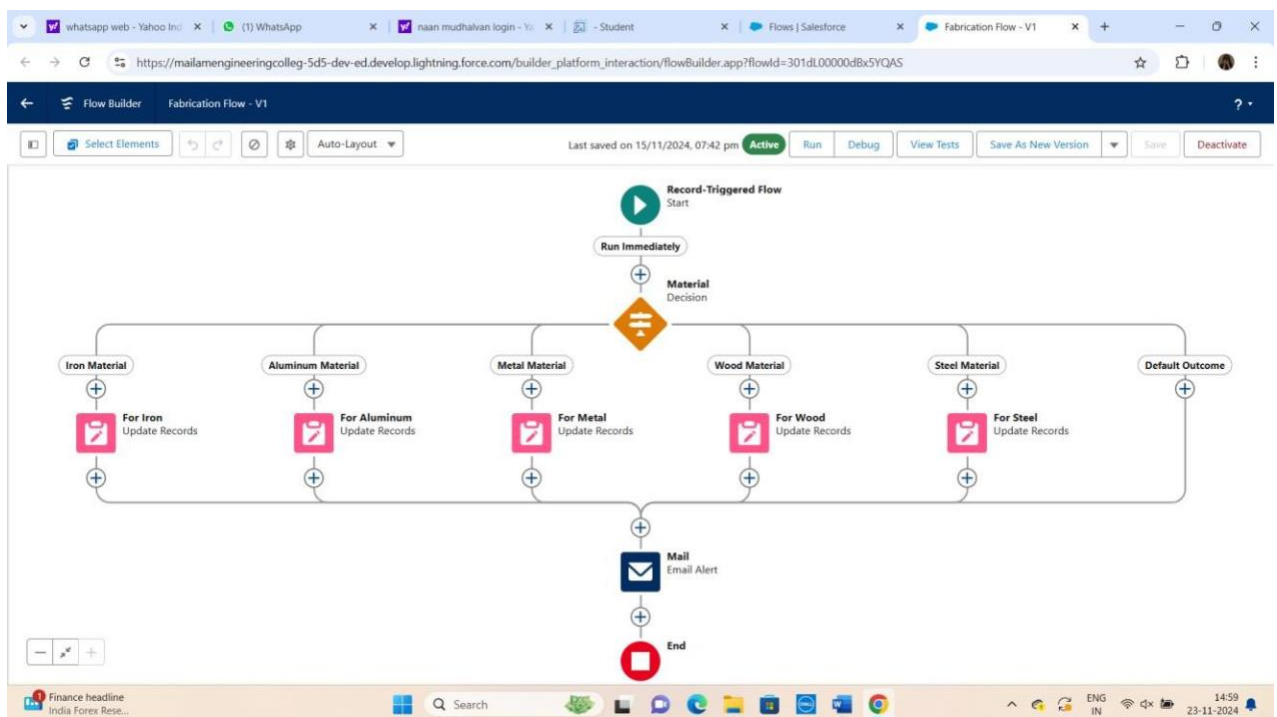
- ✓ Upload a Logo:
 - Go to **Setup > Salesforce Branding** and upload a logo.



- ✓ Create a Letterhead:
 - Navigate to **Setup > Classic Letterheads > New Letterhead**.
 - Configure the letterhead and save it.
- ✓ Create an Email Template:
 - Go to **Setup > Email Templates > New**.
 - Choose **HTML (using Classic Letterhead)**.



- Example template:
- Name: **Bill Template**
- Subject: **Fabrication Template**
- Body: Include dynamic fields like `{!Fabrication_c.Lengthc}`, `{!Shed_Workc.Width_c}`, etc.
- Save the template.



5. Testing and Validation

Effective testing ensures the functionality, performance, and reliability of the Salesforce solution. Here's a concise approach:

1. Unit Testing

Focuses on validating backend components like Apex classes and triggers.

Key Steps:

- **Apex Classes:** Write test classes (*@isTest*) to cover logic and scenarios. Use assertions to verify expected outputs.
- **Triggers:** Test all trigger events (*beforeInsert*, *afterUpdate*, etc.), ensuring proper execution and no conflicts.
- **Code Coverage:** Aim for at least 75% code coverage by testing all paths, including edge cases and exception handling.

2. User Interface (UI) Testing

Ensures the user-facing components function as expected.

Key Steps:

Custom Objects and Fields: Validate field properties (e.g., required fields, lengths) and operations (create, read, update, delete).

- **Tabs:** Ensure proper display and functionality of custom tabs.
- **Page Layouts:** Verify field arrangement on each layout (e.g., Drilling, Welding).
- **Record Types:** Confirm appropriate page layouts are assigned to each record type.
- **Validation Rules:** Test invalid data inputs to ensure error messages

appear correctly.

- **Lightning App:** Validate the navigation, responsiveness, and performance of the "Lease Management" app.

3. Email Templates Testing

Verify email templates populate fields correctly and render well across email clients.

Key Steps:

- Test dynamic field population (e.g., `{!Fabrication_c.Name_of_the_Owner_c}`).
- Check email formatting and attachments (if any).
- Send test emails to ensure compatibility across platforms.

4. Best Practices

- Test early and iteratively to identify issues at each development stage.
- Document test cases, outcomes, and resolutions for reference.
- Leverage Salesforce testing tools like Developer Console and Salesforce Inspector.
- Collect end-user feedback for UI enhancements.

Outcome

Comprehensive testing ensures a seamless user experience, robust functionality, and adherence to business requirements.

6. Key Scenarios Addressed by Salesforce in the Implementation Project

The implementation project demonstrates Salesforce's capability to address multiple business scenarios and operational challenges effectively. Here are the key scenarios:

1. Streamlining Operations with Custom Objects

- **Scenario:** Managing diverse workflows like fabrication, shed-work, pipe-lining, and worker management.
- **Solution:** Custom objects enable structured storage and retrieval of data related to these workflows, ensuring accurate tracking and reporting.

2. Enhanced Data Accessibility through Tabs

- **Scenario:** Users need an intuitive interface to view and manage object records efficiently.
- **Solution:** Custom tabs provide a user-friendly interface, improving navigation and quick access to data.

3. Consolidated Workflows via Lightning Apps

- **Scenario:** Users require a unified platform to manage processes and related data seamlessly.
- **Solution:** The "Lease Management" Lightning App integrates functionalities, reducing silos and improving collaboration.

4. Flexibility through Page Layouts and Record Types

- **Scenario:** Different user roles and workflows need customized interfaces and processes.
- **Solution:** Page layouts and record types allow tailored experiences, accommodating unique workflows like drilling, welding, cutting, and folding.

5. Data Integrity with Validation Rules

- **Scenario:** Ensuring data accuracy and consistency in critical fields like dimensions and quantities.
- **Solution:** Validation rules enforce constraints, preventing invalid data entries and ensuring reliable operations.

6. Communication and Branding with Email Templates

- **Scenario:** Sending professional and customized communications to stakeholders.
- **Solution:** Branded email templates with dynamic fields ensure consistent and personalized messaging.

7. Scalable and Secure Data Management

- **Scenario:** Handling a growing volume of operational data while maintaining security.
- **Solution:** Salesforce's scalable architecture and robust security features support data growth without compromising safety.

Outcome

This implementation showcases Salesforce's ability to handle operational complexity, enhance user experience, and deliver tailored solutions for diverse business scenarios

Conclusion

The Salesforce implementation project demonstrates how powerful customization and automation capabilities can address complex business scenarios. By leveraging features such as custom objects, record types, validation rules, and Lightning Apps, the solution streamlines operations, enhances data accessibility, and ensures data integrity.

Additionally, the use of email templates and page layouts provides a user-centric and professional approach to communication and user interface design. Salesforce's flexibility, scalability, and robust architecture enable businesses to meet their operational needs efficiently while preparing for future growth.

This project underscores Salesforce's ability to deliver a tailored, efficient, and scalable solution that drives productivity, enhances user satisfaction, and achieves organizational goals effectively.