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A CRM APPLICATION FOR WHOLESALE RICE MILL

Introduction to Salesforce:

Salesforce is your customer success platform, designed to help you sell, service,market, analyze, and connect with your customers. Salesforce has everything you need to run your business from anywhere. Using standard products and features,you can manage relationships with prospects and customers, collaborate and engage with employees and partners, and store your data securely in the cloud.

1. Project Overview

This project, **"A CRM Application for Wholesale Rice Mill"**, is designed to address the operational inefficiencies and improve customer relationship management in the rice mill industry. The primary objective is to provide a user-friendly and feature-rich CRM solution that leverages Salesforce to streamline daily operations, enhance customer experiences, and optimize resource allocation. Through this project, we aim to ensure real-time reporting, efficient role-based access, and comprehensive analytics to support the long-term business goals of rice mill owners and operators.

2. Objectives

Business Goals:

- Streamline daily reporting of rice production, sales, and inventory.
- Enhance customer experience by providing personalized service and data-driven insights.
- Improve operational efficiency through role-based access and data accuracy.

Specific Outcomes:

- Provide owners with daily reports detailing the quantity of rice produced, sold, and revenue generated.
- Enable accurate cost calculation and total payment for rice based on predefined formulas.
- Implement validation rules to ensure data accuracy and error prevention.
- Offer dashboards and analytics for informed decision-making.

3. Salesforce Key Features and Concepts Utilized

Key Features:

- **Reporting and Dashboards:**
  Daily analytics and reports to visualize rice production, sales, and revenue trends, allowing for better planning and resource allocation.
- **Rollup Summary Fields:**
  Summarizes rice-related data, such as total rice supplied by suppliers, using functions like SUM, COUNT, MIN, and MAX.
- **Cross-Object Formula Fields:**
  Calculates total costs by multiplying the quantity of rice purchased with its price per kilogram, ensuring transparent payment calculations.
- **Validation Rules:**
  Utilizes the `ISBLANK` formula to validate fields, ensuring mandatory data is entered and error messages are displayed when inputs are invalid.
- **Permission Sets and Role Hierarchies:**
  Configures roles and permissions to align with organizational hierarchy:
  - Owners can access employee and worker records.
  - Employers can access worker records only.
  - Organization-Wide Defaults (OWD) are set to restrict access while allowing necessary visibility.

4. Detailed Steps to Solution Design

Step 1: Define the Data Model

- **Create Custom Objects:**
  - **Supplier Object:**
    - Go to **Setup > Object Manager > Create > Custom Object**.
    - Label Name: `Supplier`, Plural Label Name: `Suppliers`.
    - Record Name: `Supplier Name`, Data Type: `Text`.
    - Enable "Allow Reports," "Track Field History," and "Allow Search."
    - Save.
  - **Rice Mill Object:**
    - Follow the same steps.
    - Label Name: `Rice Mill`, Plural Label Name: `Rice Mills`.
    - Record Name: Auto Number, Display Format: `rice-{000}`, Starting Number: `1`.
    - Enable "Allow Reports," "Track Field History," and "Allow Search."
    - Save.
  - **Consumer Object:**
    - Label Name: `Consumer`, Plural Label Name: `Consumers`.
    - Record Name: Auto Number, Display Format: `consumers-{000}`, Starting Number: `1`.
    - Save.
  - **Rice Details Object:**
    - Label Name: `Rice Details`, Plural Label Name: `Rice Details`.
    - Record Name: Auto Number, Display Format: `rice-{000}`, Starting Number: `1`.
    - Save.
- **Create Fields for Custom Objects:**
  - For **Rice Details:**
    - Go to **Object Manager > Rice Details > Fields & Relationships > New**.
    - Data Type: `Number`.
    - Field Label: `Rice Distributed`, Length: `5`.
    - Save.
  - For **Rice Mill:**
    - Create a `Number` field named `Rice Price/Kg` with Length: `5`.
  - For **Supplier and Rice Mill:**

- Add roll-up summary fields:
  - For **Supplier:** Summarizes the total quantity of rice supplied from `Rice Details`.
  - For **Rice Mill:** Summarizes data like total revenue generated or quantity sold.

Step 2: Design the User Interface

- **Create Tabs:**
  - Go to **Setup > Tabs > New (under Custom Object Tabs)**.
  - Create tabs for `Supplier`, `Rice Mill`, `Consumer`, and `Rice Details`.
  - Assign tab styles, ensure the "Append Tab to Users' Existing Customizations" option is checked, and click Save.
- **Create Page Layouts:**
  - Go to each object and customize the layout under **Page Layouts**.
  - Arrange fields logically and include relevant related lists for quick access.

Step 3: Build a Lightning App

- **Create Lightning App:**
  - Go to **Setup > App Manager > New Lightning App**.
  - App Name: `My Rice`.
  - Configure app options and upload a custom logo.
  - Add navigation items (`Supplier`, `Rice Mill`, `Consumer`, `Rice Details`) and assign the System Administrator profile.
  - Save and Finish.

Step 4: Implement Business Logic

- **Create Master-Detail Relationships:**
  - Between `Rice Details` and `Supplier`.
  - Between `Rice Details` and `Rice Mill`.
- **Define Roll-Up Summary Fields:**
  - For `Supplier`: Summarize total rice supplied.
  - For `Rice Mill`: Summarize daily revenue or sales data.
- **Validation Rules:**
  - Example: Use `ISBLANK` to ensure critical fields like `Rice Type` or `Quantity` are not empty.
- **Cross-Object Formula Fields:**
  - Example: In `Rice Details`, calculate `Total Amount = Quantity * Rice Price/Kg`.

Step 5: Develop Reports and Dashboards

- **Reports:**
  - Create daily sales reports showing rice quantity sold, revenue, and most popular rice types.
- **Dashboards:**
  - Visualize key metrics like total revenue, daily sales trends, and supplier performance using bar charts, pie charts, and line graphs.
  -

Step 6: Testing and Deployment

- **Testing:**
  - Validate field relationships, roll-up summaries, and formula fields.
  - Test user roles and permissions for accurate data visibility.
- **Deployment:**
  - Deploy the solution in the Salesforce production environment.
  - Provide training materials and documentation for end-users.

5. Testing and Validation

Approach to Testing

1. Unit Testing (Apex Classes and Triggers):
Unit testing ensures that Apex code (classes and triggers) executes correctly and delivers expected results. In Salesforce, all Apex code must achieve at least 75% test coverage before deployment to production.

Apex Class Testing (ConsumerRecord):

- **Purpose:** Test the functionality of the `ConsumerRecord` class to ensure email notifications are sent correctly.
- **Test Class Code:**

```
@isTest
private class ConsumerRecordTest {
    static testMethod void testSendEmailNotification() {
        // Create test data
        consumer__c testConsumer = new consumer__c(
            Name = 'Test Consumer',
            email__c = 'test@example.com'
        );
```

```
        insert testConsumer;

        // Call the method to test
        List<consumer__c> testConsumers = [SELECT Id, email__c FROM
consumer__c];
        ConsumerRecord.sendEmailNotification(testConsumers);

        // Assert to check email sending logic (Mocking required in some
cases)
        System.assertEquals(1, Limits.getEmailInvocations());
    }
}
```

Apex Trigger Testing (consumerTrigger):

- **Purpose:** Ensure the `consumerTrigger` executes the `sendEmailNotification` method correctly after new consumer records are inserted.
- **Test Trigger Code:**

```
@isTest
private class ConsumerTriggerTest {
    static testMethod void testConsumerTrigger() {
        // Create test data
        consumer__c testConsumer = new consumer__c(
            Name = 'Trigger Test Consumer',
            email__c = 'trigger_test@example.com'
        );

        // Start test context
        Test.startTest();

        // Insert test consumer to trigger the logic
        insert testConsumer;

        // End test context
        Test.stopTest();

        // Assertions (Mocked email assertions can be added)
        System.assertEquals(1, [SELECT COUNT() FROM consumer__c WHERE
email__c = 'trigger_test@example.com']);
    }
```

```
}
```

6. Key Scenarios Addressed by Salesforce in the Implementation Project

The Salesforce implementation for the **CRM Application for Wholesale Rice Mill** addresses multiple real-world scenarios, enabling streamlined operations, enhanced customer management, and effective reporting. Below are the key scenarios and how Salesforce handles them:

1. Centralized Supplier Management

Scenario: The rice mill needs a way to manage multiple suppliers, track the amount of rice supplied, and monitor supplier performance.

Salesforce Solution:

- **Supplier Object:** Captures details of all suppliers, including contact information and historical supply records.
- **Roll-Up Summary Fields:** Automatically calculate total rice supplied by each supplier.

2. Automated Consumer Engagement

Scenario: Consumers need to be notified about promotions, updates, or acknowledgments for purchases.

Salesforce Solution:

- **Apex Classes:** Send automated email notifications (e.g., welcome emails or promotional offers) using the `ConsumerRecord` class.
- **Triggers:** Automatically invoke email logic after a new consumer record is added, ensuring timely communication.

3. Inventory and Sales Monitoring

Scenario: The rice mill requires real-time tracking of rice inventory, daily sales, and revenue generated.

Salesforce Solution:

- **Rice Details Object:** Tracks rice types, quantities, and pricing.
- **Formula Fields:** Calculate total revenue per transaction (`Quantity * Price per kg`).
- **Reports:** Provide insights into daily sales, revenue trends, and popular rice types.

4. Permission-Based Data Access

Scenario: Different roles (Owner, Employer, Worker) require varying levels of access to records.

Salesforce Solution:

- **Permission Sets and Roles:**
  - **Owner:** Full access to all records and reports.
  - **Employer:** Access to worker records but restricted from sensitive financial data.
  - **Worker:** Access only to their tasks or assigned records.
- **Organization-Wide Defaults (OWD):** Ensures data visibility is appropriately restricted.

5. Error Prevention During Data Entry

Scenario: Validation is needed to ensure data accuracy and prevent errors, such as blank fields or invalid inputs.

Salesforce Solution:

- **Validation Rules:**
  - Example: Use `ISBLANK` to prevent saving a record if mandatory fields (e.g., Rice Type, Quantity) are empty.
  - Displays error messages guiding users to correct input errors.

6. Real-Time Reporting for Decision-Making

Scenario: The owner requires daily and periodic insights into operations to make informed decisions.

Salesforce Solution:

- **Custom Dashboards:**
  - Visualize key metrics like daily sales, revenue, and inventory levels.
  - Include graphical representations (e.g., bar charts, pie charts).
- **Scheduled Reports:** Automatically send daily reports to the owner, summarizing operations.

7. Integration and Scalability

Scenario: As the business grows, the CRM system should scale to handle increased data and new functionalities.

Salesforce Solution:

- **Flexible Data Model:** Custom objects (e.g., `Supplier`, `Rice Details`, `Consumer`) ensure the application is adaptable.
- **Lightning Platform:** Easily add new features (e.g., integration with third-party systems or mobile applications).

8. Cross-Object Calculations for Billing and Payments

Scenario: The rice mill needs to calculate total billing amounts automatically based on rice quantity and pricing.

Salesforce Solution:

- **Cross-Object Formula Fields:**
  - Calculate total cost (`Rice Quantity * Price per Kg`) for transactions.
  - Simplify payment management by automating calculations.

9. Improved Employee Productivity

Scenario: Workers and employers need tools to manage tasks and track performance efficiently.

Salesforce Solution:

- **Page Layouts:** Tailored layouts ensure that each user views only relevant information.
- **Lightning App:** Consolidates all essential data (supplier, consumer, rice details) into a single interface for efficient navigation.

10. Compliance and Audit Tracking

Scenario: The rice mill must track changes to records for audit purposes.

Salesforce Solution:

- **Field History Tracking:** Records changes made to key fields, providing a clear audit trail.
- **Reports:** Generate audit logs for compliance purposes

2. User Interface Testing:

This ensures the UI elements, including Lightning Pages, Page Layouts, and Reports/Dashboards, work as intended for different user profiles.

Steps:

1. **Object Tab Verification:**
    - Navigate to tabs (e.g., Supplier, Rice Mill, Consumer, Rice Details).
    - Verify that fields, relationships, and roll-up summaries display correctly.
2. **Page Layout Validation:**
    - Check that page layouts match user roles:
        - Owner: Full access to all fields.
        - Employee: Restricted views (e.g., hide sensitive financial data).
3. **Dashboard and Report Testing:**
    - Open predefined dashboards and verify correct data representation (e.g., daily sales trends, inventory levels).
    - Test filters (e.g., by date range or rice type) to ensure data accuracy.

4. **Lightning App Navigation:**
    - Verify that navigation items (Supplier, Rice Mill, Consumer, Rice Details) appear in the app.
    - Ensure quick access to reports and dashboards.
5. **Validation Rule Testing:**
    - Test error messages for invalid inputs (e.g., blank fields in required fields like `Rice Type`).

Tools for Testing:

- Salesforce Developer Console (for Apex tests).
- Salesforce UI (for user interface validation).
- Automation Tools (optional): Use Selenium or similar tools for automated UI testing.

Validation Checklist:

- **Apex Code:** Minimum 75% test coverage achieved.
- **Triggers:** Execute correctly with all logic validated.
- **UI:** Fields, layouts, and dashboards function as intended.
- **Permissions:** Role-based data visibility validated.

7. Conclusion

Summary of Achievements

The implementation of the **CRM Application for Wholesale Rice Mill** using Salesforce has successfully addressed the operational and management challenges of the rice mill factory. The project has achieved the following:

- **Centralized Management:**
  - Efficiently organized supplier, consumer, and rice inventory data into a unified system.
  - Created custom objects such as `Supplier`, `Consumer`, `Rice Details`, and `Rice Mill` to manage critical operations.
- **Streamlined Operations:**
  - Automated daily reporting of rice inventory, sales, and revenue.
  - Enabled quick decision-making through real-time dashboards and reports.
- **Enhanced Customer Engagement:**
  - Implemented automated email notifications to improve consumer communication and loyalty.
  - Provided tools to track and reward top customers.
- **Error Reduction:**
  - Validation rules and automated calculations ensured accurate data entry and minimized errors in billing and inventory management.
- **Role-Based Access:**
  - Implemented permission sets and roles to provide secure and tailored access for owners, employers, and workers.
- **Future-Ready System:**
  - Designed a scalable and flexible application that can adapt to growing business needs and integrate with additional features or third-party tools.

Key Takeaways

This project demonstrated how Salesforce's advanced capabilities, including custom objects, formula fields, validation rules, roll-up summaries, and Lightning App Builder, can be effectively used to digitize and optimize traditional business processes.

The CRM Application not only meets the immediate operational needs of the rice mill but also provides a robust platform for sustained growth and customer satisfaction.

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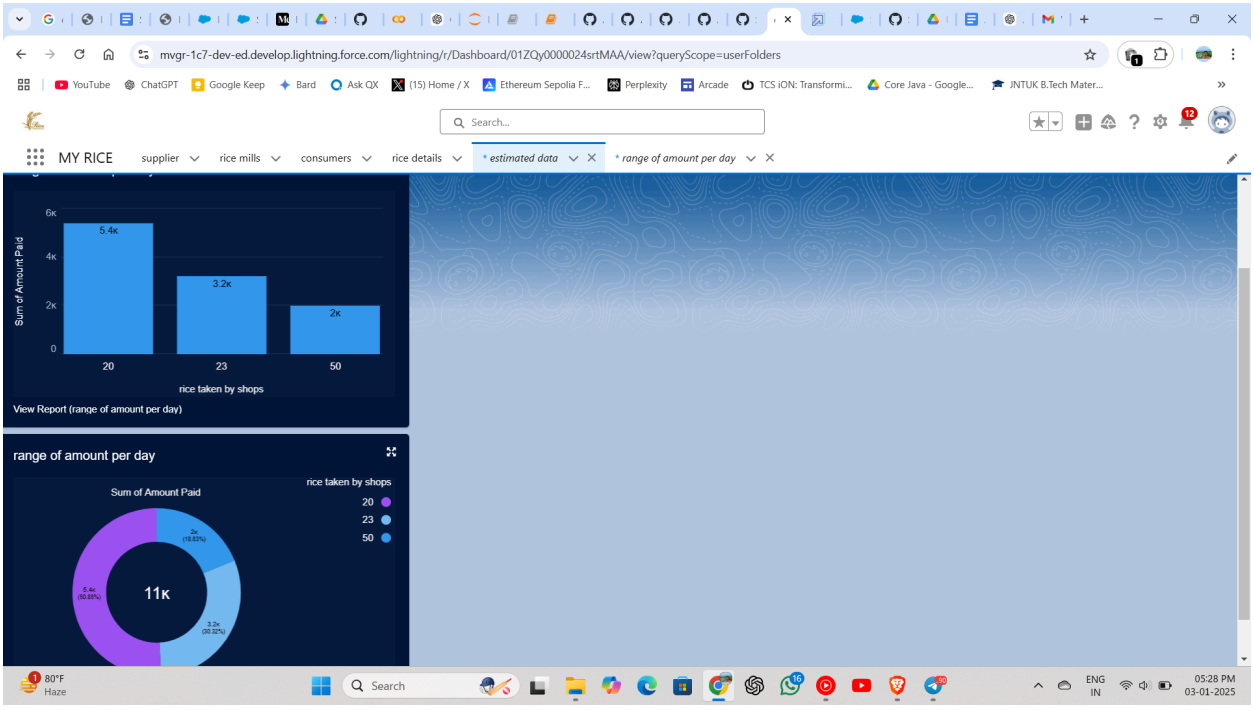
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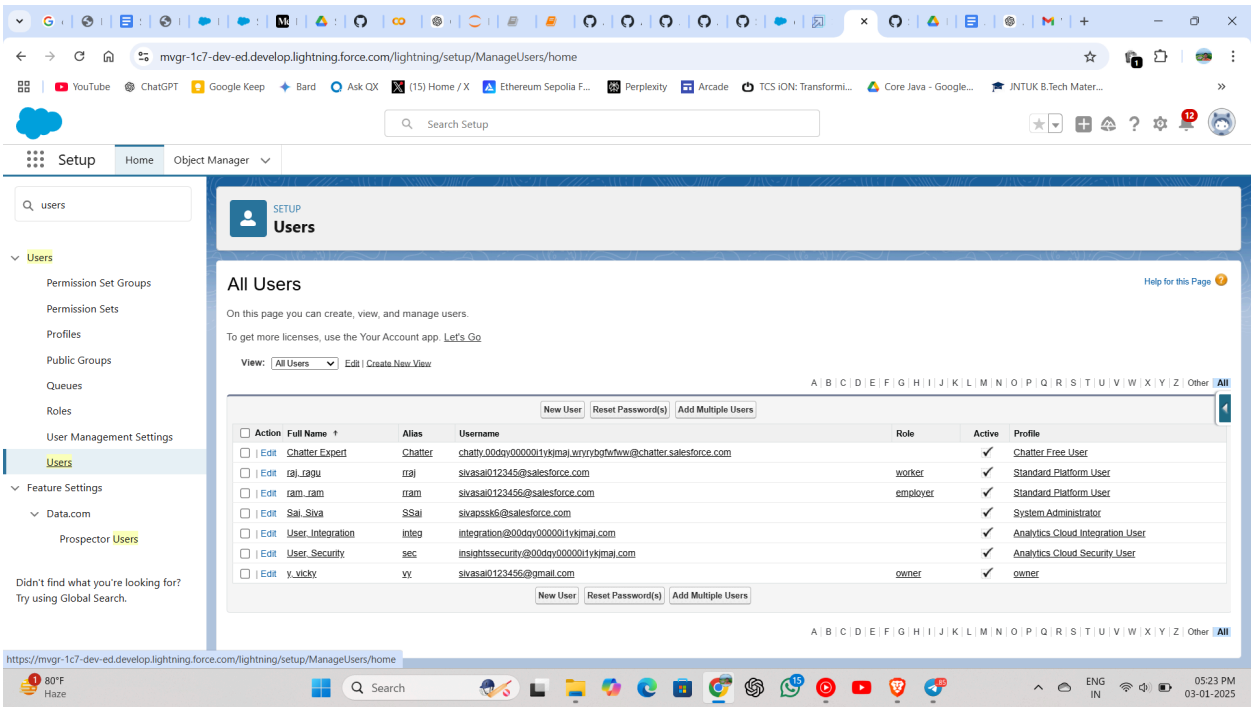
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Try using Global Search.
SETUP
Users
All Users
On this page you can create, view, and manage users.
To get more licenses, use the Your Account app. Let's Go
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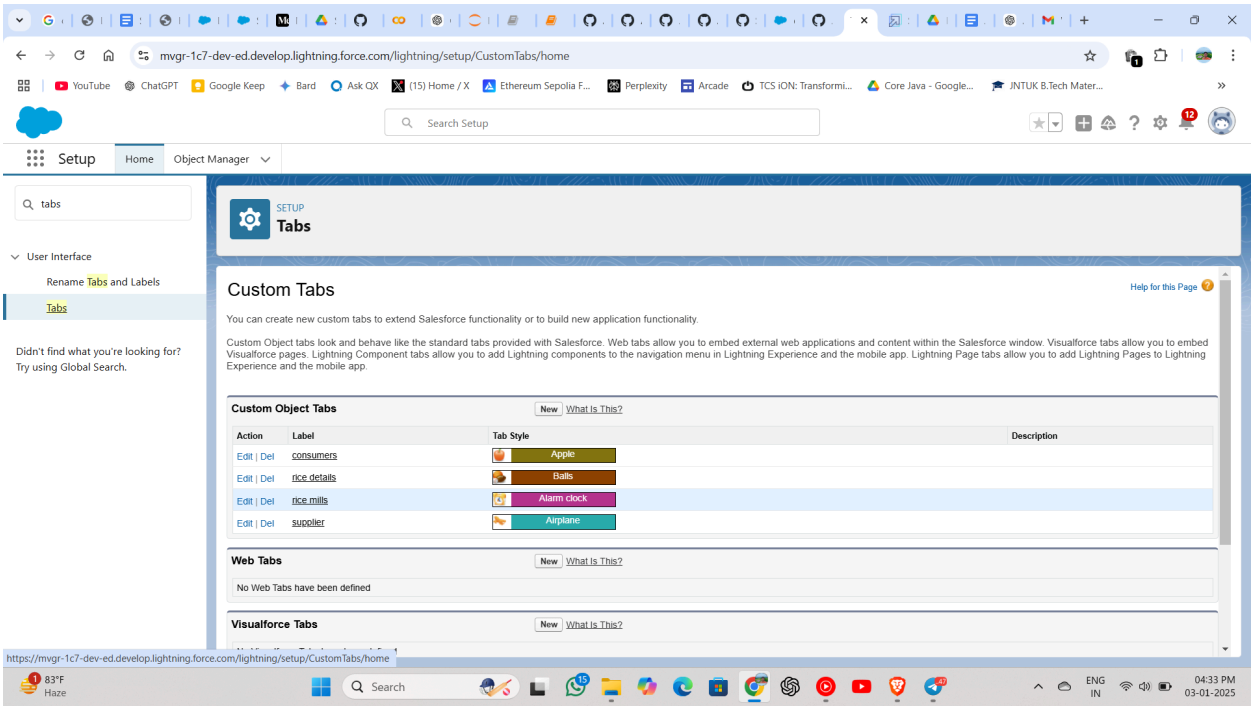
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Rename Tabs and Labels
Tabs
Didn't find what you're looking for?
Try using Global Search.
SETUP
Tabs
Custom Tabs
Help for this Page
You can create new custom tabs to extend Salesforce functionality or to build new application functionality.
Custom Object Tabs
New
What Is This?
Action
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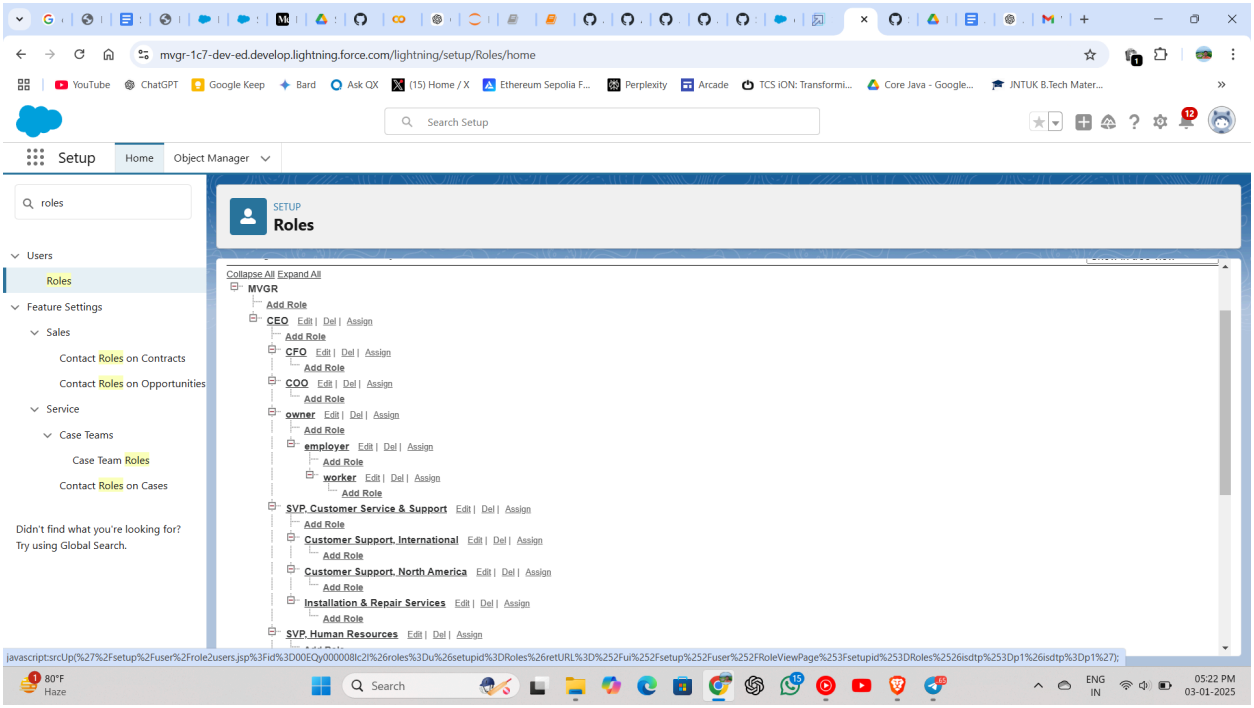
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Case Team Roles
Contact Roles on Cases
Didn't find what you're looking for?
Try using Global Search.
SETUP
Roles
Collapse All
Expand All
MVGR
Add Role
CEO
CFO
COO
owner
employer
worker
SVP, Customer Service & Support
Customer Support, International
Customer Support, North America
Installation & Repair Services
SVP, Human Resources
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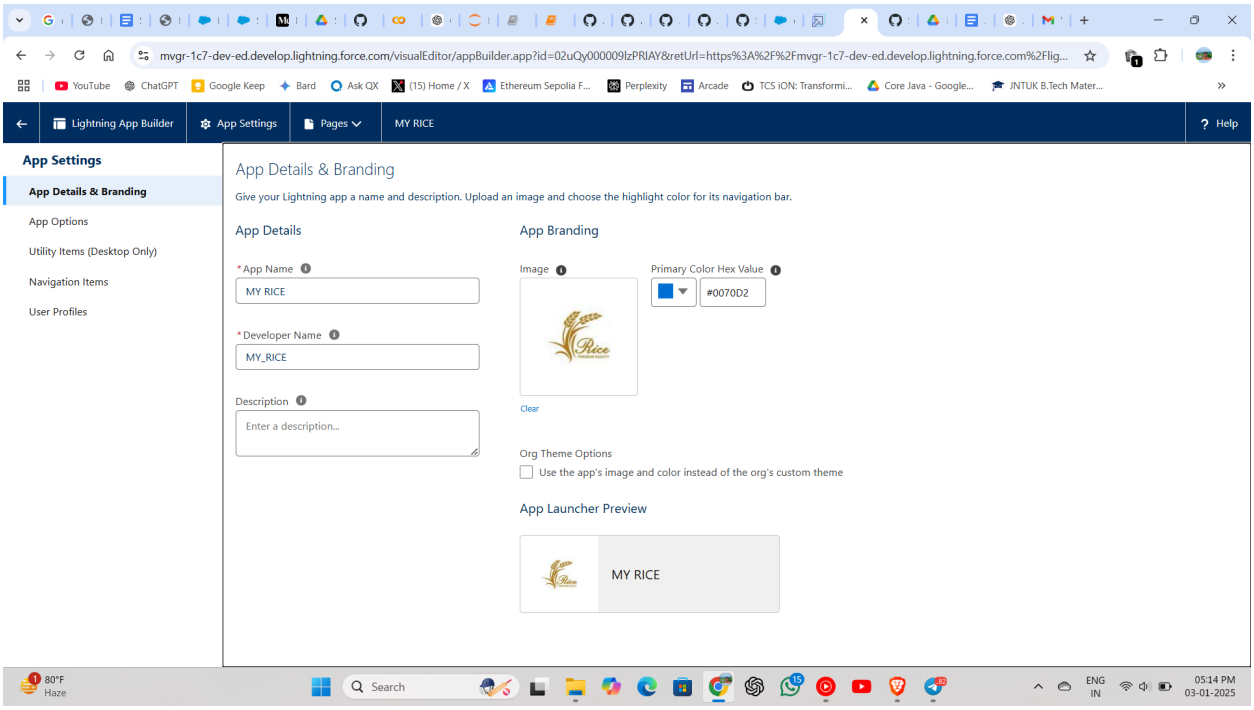
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MY RICE
Help
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App Details & Branding
App Options
Utility Items (Desktop Only)
Navigation Items
User Profiles
App Details & Branding
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App Details
App Name
MY RICE
Developer Name
MY_RICE
Description
Enter a description...
App Branding
Image
Primary Color Hex Value
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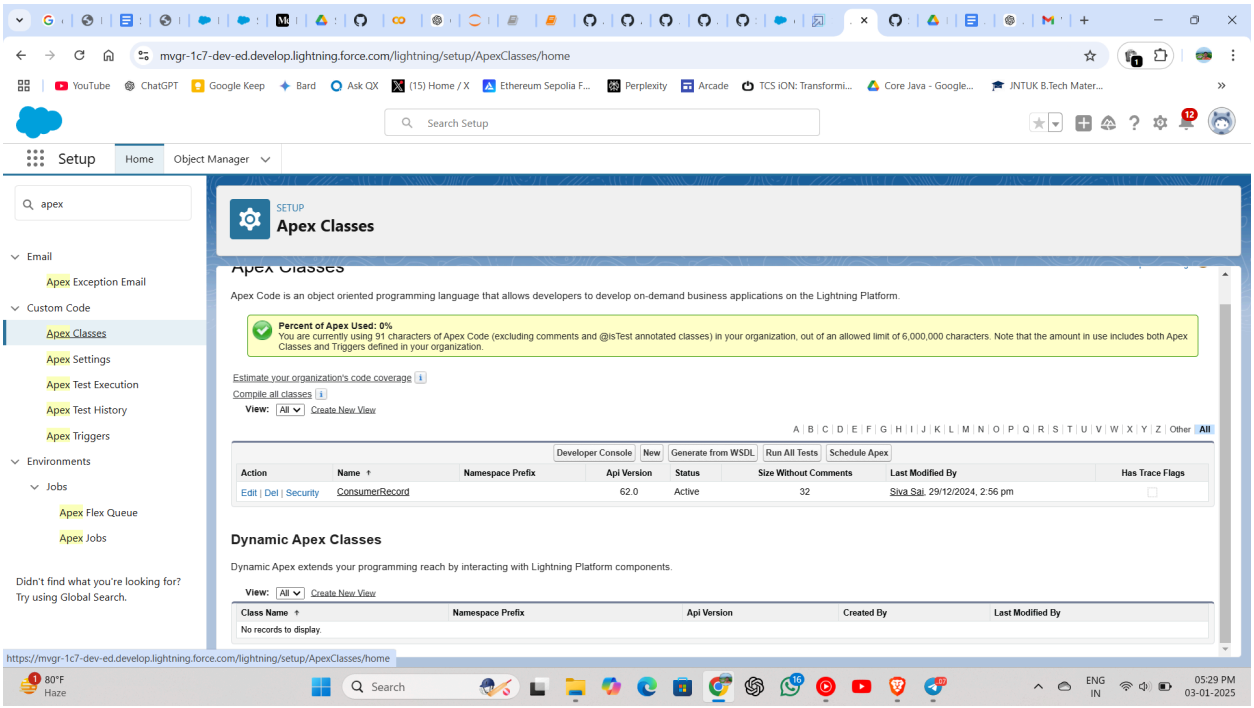
Clear
Org Theme Options
Use the app's image and color instead of the org's custom theme
App Launcher Preview
MY RICE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Setup
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Email
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Custom Code
Apex Classes
Apex Settings
Apex Test Execution
Apex Test History
Apex Triggers
Environments
Jobs
Apex Flex Queue
Apex Jobs
Didn't find what you're looking for?
Try using Global Search.
SETUP
Apex Classes
Apex Code is an object oriented programming language that allows developers to develop on-demand business applications on the Lightning Platform.
Percent of Apex Used: 0%
You are currently using 91 characters of Apex Code (excluding comments and @isTest annotated classes) in your organization, out of an allowed limit of 6,000,000 characters. Note that the amount in use includes both Apex Classes and Triggers defined in your organization.
Estimate your organization's code coverage
Compile all classes
View: All Create New View
Developer Console
New
Generate from WSDL
Run All Tests
Schedule Apex
Action
Name
Namespace Prefix
Api Version
Status
Size Without Comments
Last Modified By
Has Trace Flags
Edit | Del | Security
ConsumerRecord
62.0
Active
32
Siva Sai, 29/12/2024, 2:56 pm
Dynamic Apex Classes
Dynamic Apex extends your programming reach by interacting with Lightning Platform components.
View: All Create New View
Class Name
Namespace Prefix
Api Version
Created By
Last Modified By
No records to display.

GITHUB LINK:

https://github.com/Sivapssk/A-CRM-APPLICATION-FOR-WHOLESALE-RICE-MILL/tree/main