Salesforce

Tender-and-contract-management-system

INTRODUCTION

SALESFORCE-Tender-and-contract-management-system
The traditional process of tendering and contract management in the civil engineering and construction industry is often manual, paper-based, and fragmented, leading to delays, miscommunication, and lack of transparency ,tracking multiple tenders and bid submissions real-time updates on contract approval status, Manual evaluation of bids.

INDUSTRY : Construction / Infrastructure / Civil Engineering Industry.

PROJECT TYPE : Salesforce Custom App Development Project (Admin + Developer).

TARGET USER : "The target users of this system include procurement managers, contractors, project managers, finance teams, and executives who require streamlined tendering, bidding, and contract lifecycle management.

📌 Problem Statement

The traditional process of tendering and contract management in the civil engineering and construction industry is often manual, paper-based, and fragmented. This leads to:

-Delays in processing tenders and contracts

-Miscommunication among stakeholders

-Lack of transparency in bid evaluations

-Challenges in tracking multiple tenders and bid submissions

-Absence of real-time updates on contract approval status

🎯 Objectives

-Automate the tender creation and approval process

-Enable contractors to submit and track bids online

-Streamline contract awarding and payment tracking

-Provide dashboards for monitoring tender lifecycle and performance metrics

Phase 1: Problem Understanding & Industry Analysis

👉Need : To understand what we have to building and why so it will help in project.

1.Problem statement : The traditional process of tendering and contract management in the civil engineering and construction industry is often manual, paper-based, and fragmented. This leads to:’

- Delays in processing tenders and contracts
- Miscommunication among stakeholders
- Lack of transparency in bid evaluations
- Challenges in tracking multiple tenders and bid submissions
- Absence of real-time updates on contract approval status

🎯 **Objectives :**

- Automate the tender creation and approval process
- Enable contractors to submit and track bids online
- Streamline contract awarding and payment tracking
- Provide dashboards for monitoring tender lifecycle and performance metrics.

2. Requirement Gathering : Talk to stakeholders (contractor , engineers , government companies etc) .

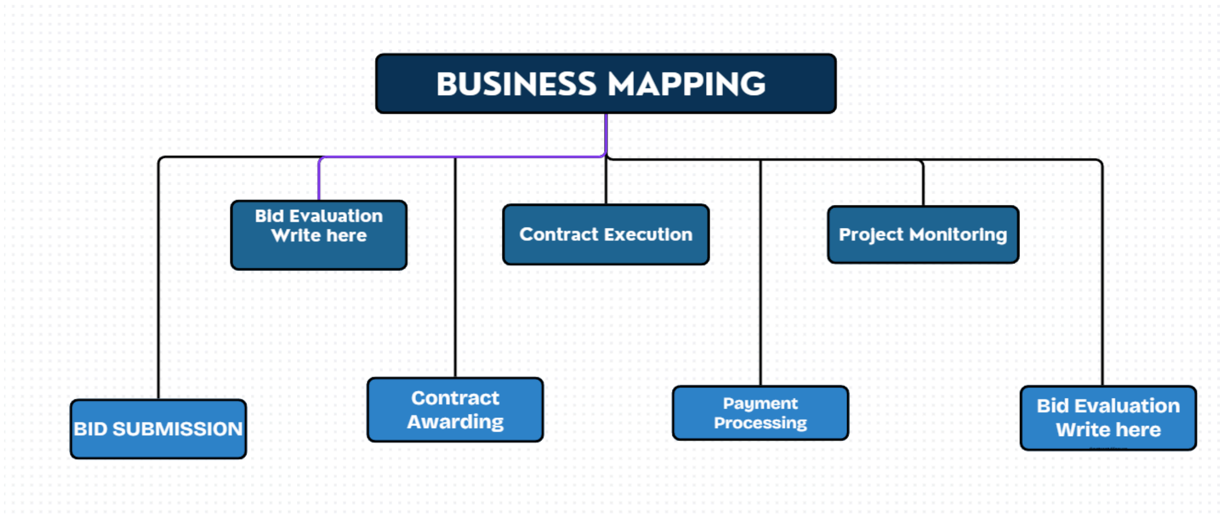
Example

- Stakeholder Interviews: Conducted with procurement, finance, and project management teams
- Document Analysis: Reviewed existing tender and contract documents
- System Analysis: Assessed current manual processes and identified automation opportunities.

3.**Business Process Mapping:** Tender Creation: Procurement team creates and publishes tenders

❖ **Bid Submission**:   Contractors submit bids through the system
❖ **Bid Evaluation**: Procurement team evaluates bids based on predefined criteria
❖ **Contract Awarding**: Selected contractor is awarded the contract
❖ **Contract Execution**: Contractor performs work as per contract terms
❖ **Payment Processing**: Finance department processes payments based on milestones

- ❖ **Project Monitoring**: Project managers track progress and ensure compliance
- ❖ **Contract Closure**: Upon completion, the contract is closed, and final reports are generated



4. <u>Industry-specific Use Case Analysis</u> :

- Government Infrastructure Projects: Managing tenders for road, bridge, and building construction
- Private Construction Companies: Handling contracts with multiple subcontractors
- Real Estate Developers: Automating tendering process for material supply
- Engineering Procurement & Construction (EPC) Firms: Managing large-scale.

5 <u>AppExchange Tools Explored</u> :

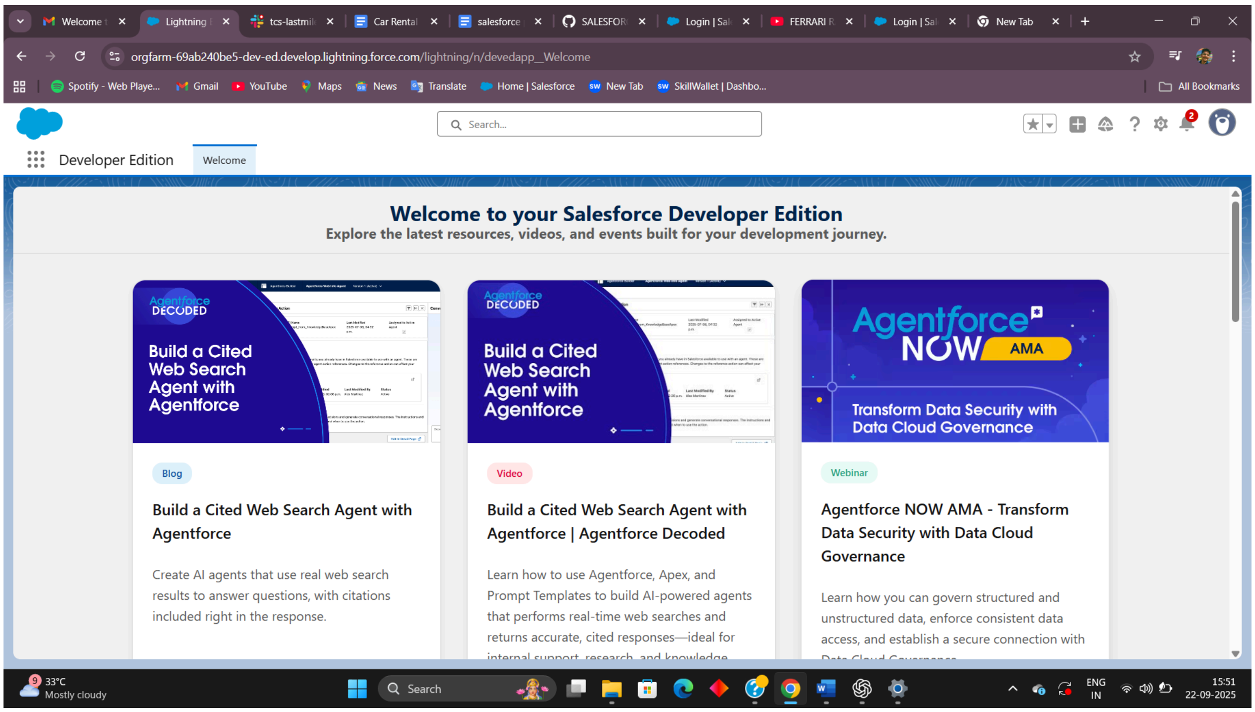
- DocuSign for Salesforce: For digital signing of contracts
- Conga Composer: To generate tender documents and reports
- Salesforce Maps: For visualizing project locations
- Accounting Seed / FinancialForce: For financial tracking and integration
- Formstack / Nintex: To create digital forms for bid submissions
- Tableau CRM (Einstein Analytics): For advanced analytics and dashboards

<u>Phase 2 : Org Setup & Configuration</u>

👉 Goal: Prepare Salesforce environment.

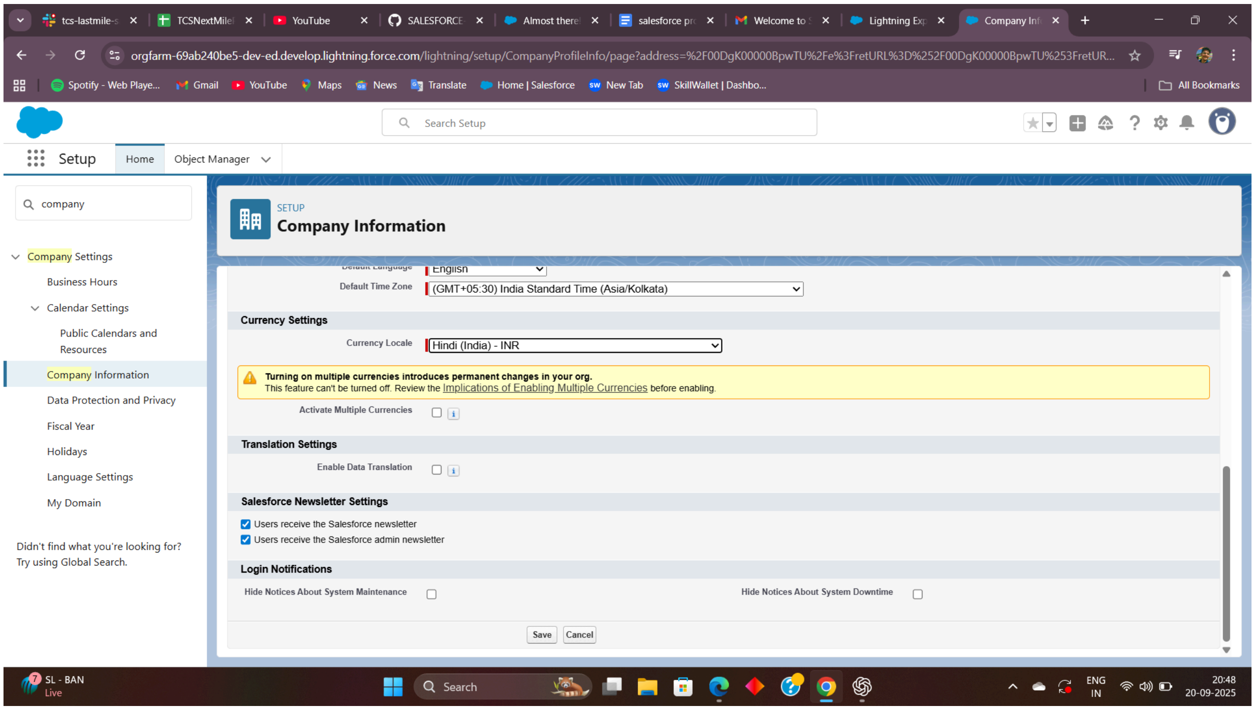
1. **Salesforce Editions :**

- Select Developer Edition (free, best for practice) .
- Justify why (for learning + testing Tender & Contract Management system).



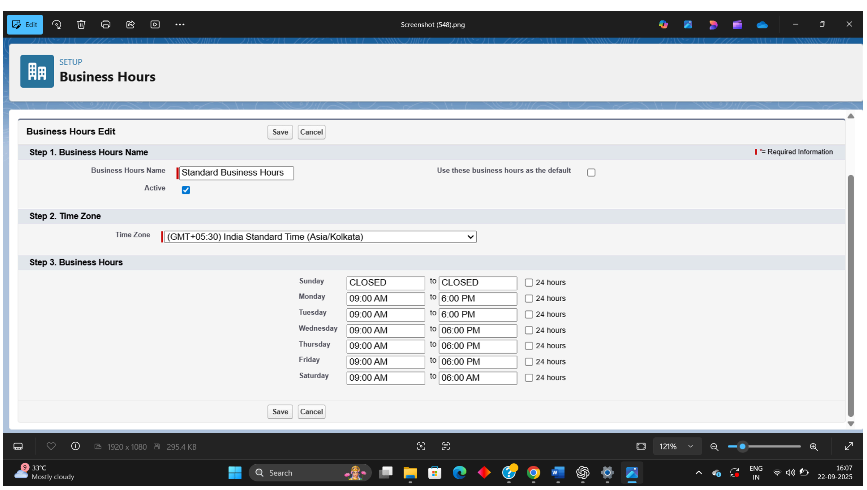
2 . **Company Profile Setup :**

- Company Name: Tender & Contract Management System Pvt. Ltd.
- Primary Contact: System Administrator (Admin User)
- Default Currency: INR (₹) – Indian Rupee
- Default Locale: English (India)
- Default Time Zone: (GMT+5:30) Asia/Kolkata
- Default Language: English
- Corporate Address: (You can add a dummy address like New Delhi, India for practice)



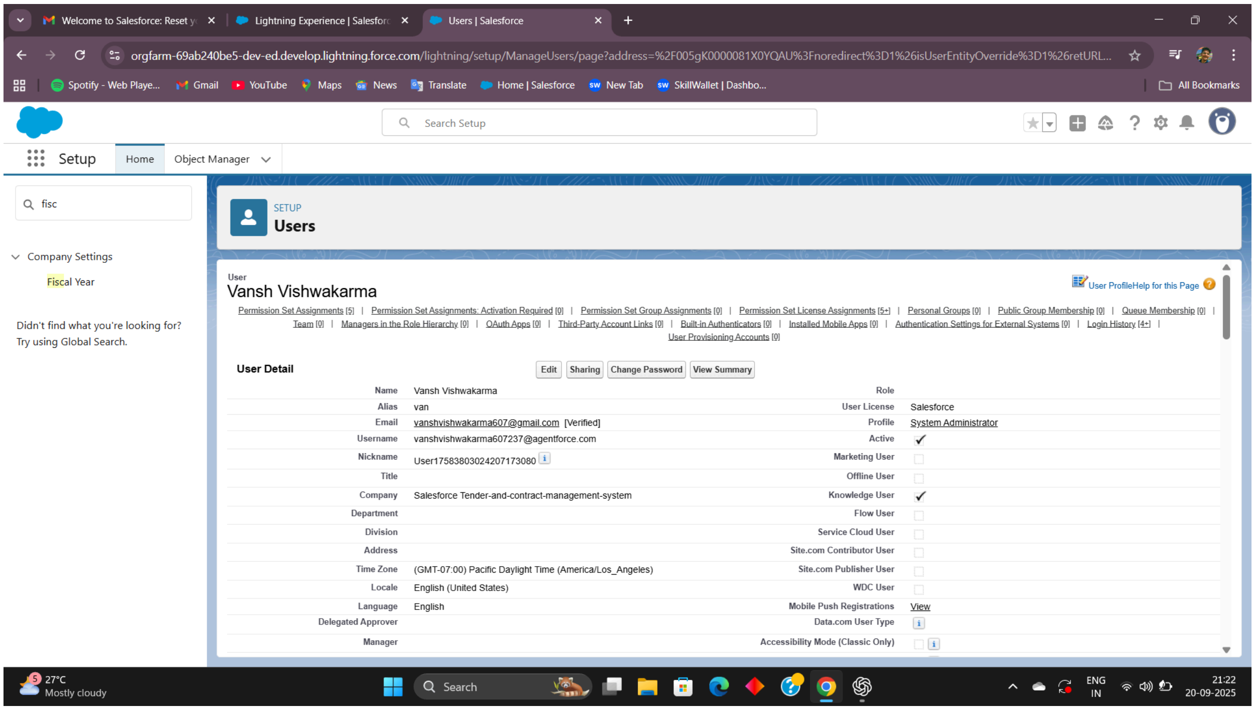
3. <u>Business Hours & Holidays :</u>

- Define Business Hours (Mon–Fri, 9:00 AM – 6:00 PM IST)
- Add Holidays (e.g., Independence Day, Diwali, New Year)



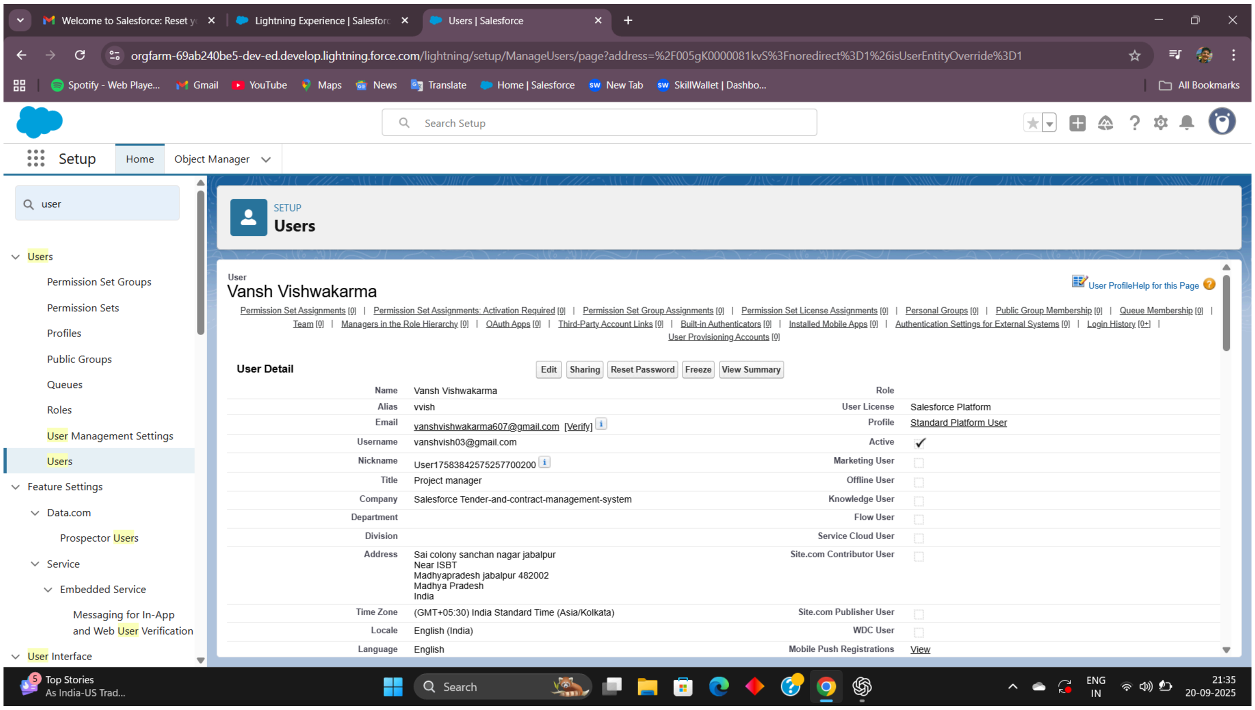
4. <u>Fiscal Year Settings</u> :

- Choose Standard Fiscal Year (Jan–Dec OR Apr–Mar, based on industry).



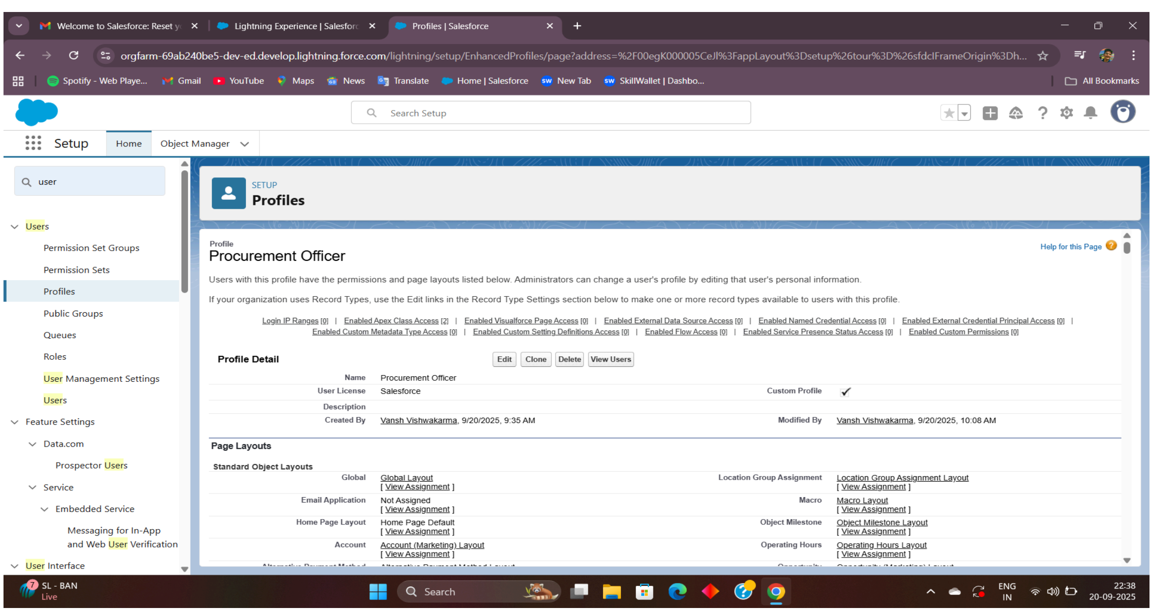
5. <u>User Setup & Licenses</u> :

- Create sample users:
- Procurement Manager
- -Contractor
- -Finance Officer
- -System Admin



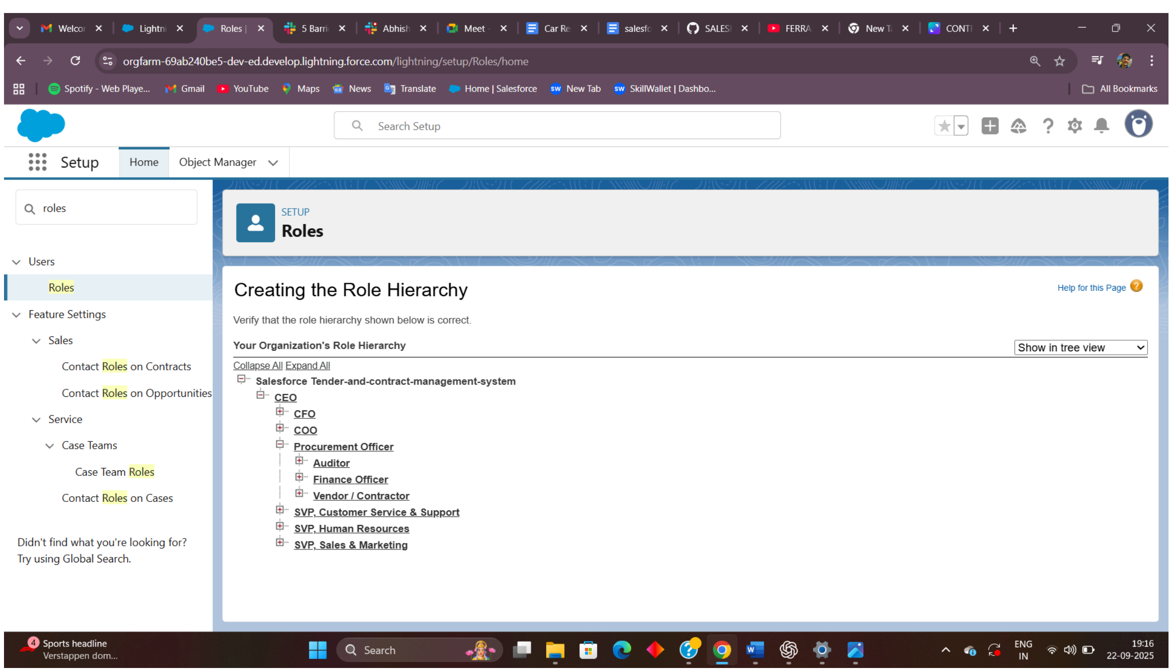
6 . Profiles :

- Standard Profiles: Admin, Standard User
- Custom Profile: Procurement User (restricted to Tender objects)



7. **Roles** :

- Role Hierarchy:
- CEO → Procurement Head → Procurement Officer → Contractor



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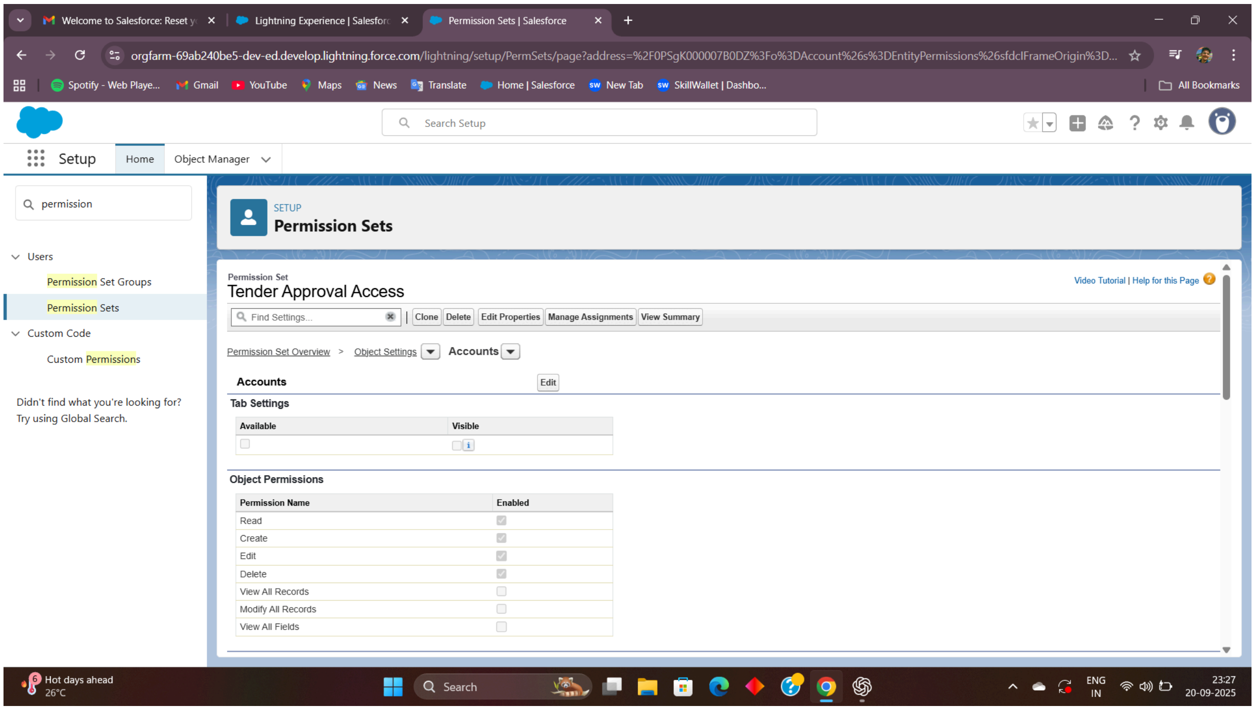
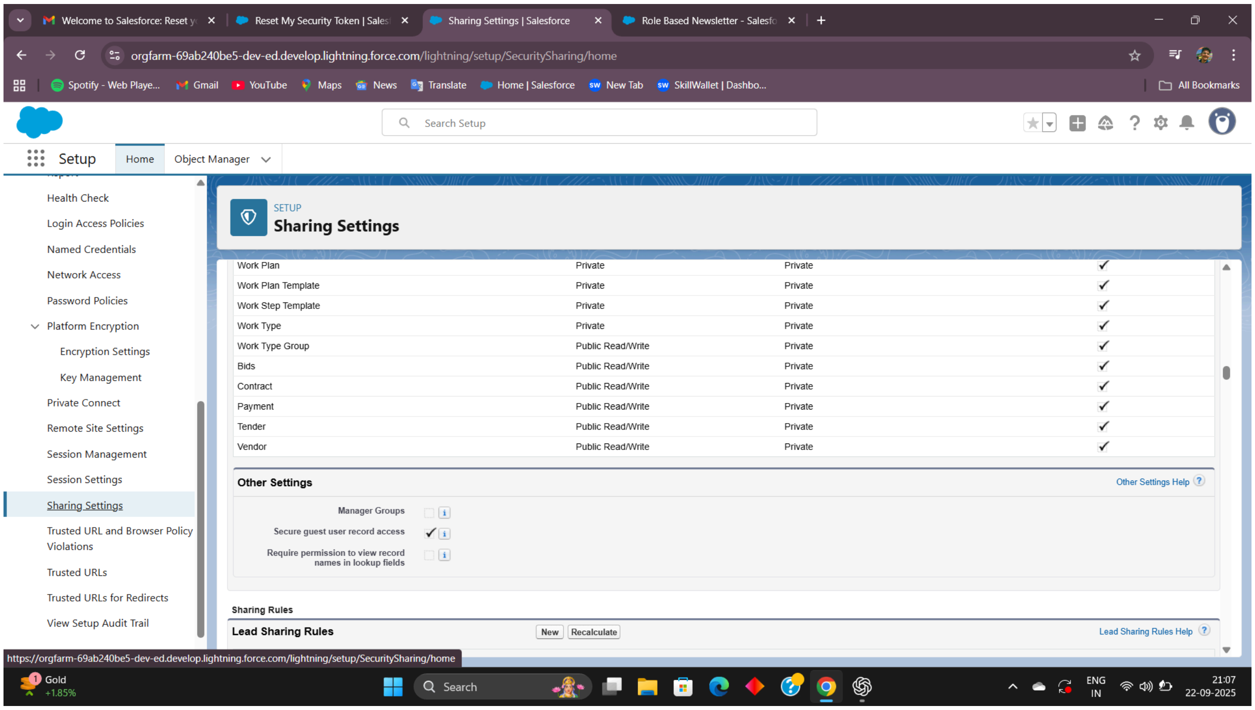
8. **Permission Sets** :

- Create extra permissions (e.g., Finance Approval, Contract Editing)



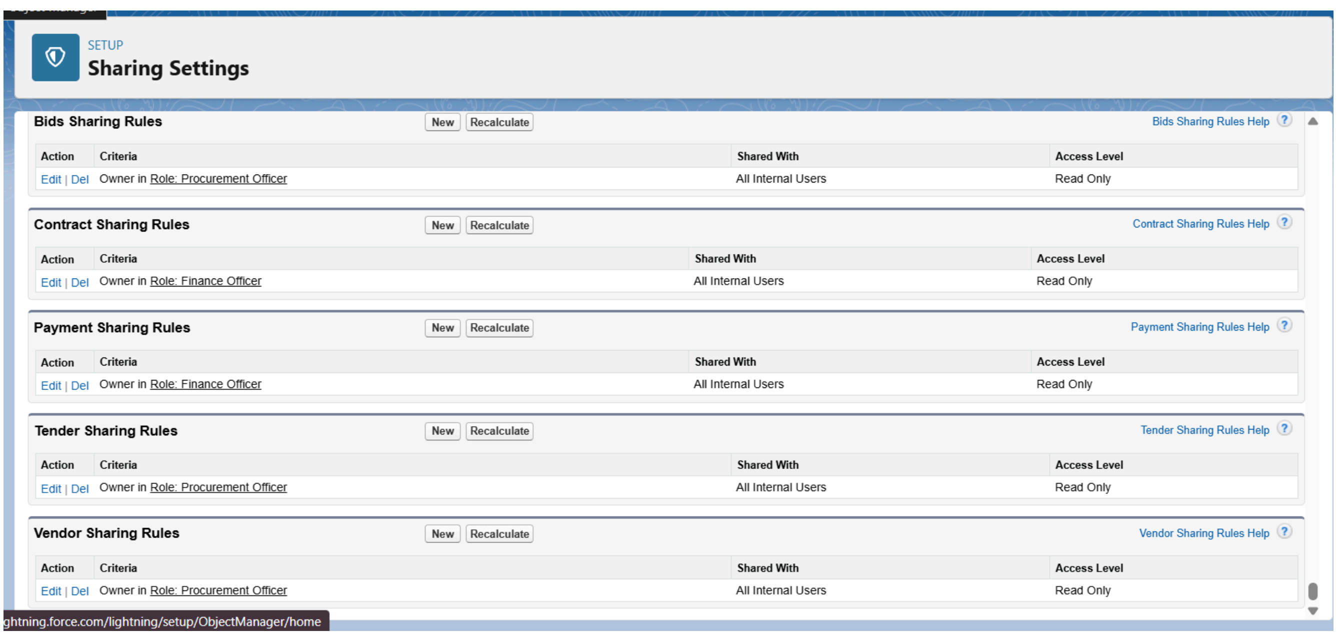
9. **OWD (Org-Wide Defaults)** :

- Tenders – Private
- Contracts – Private
- Bids – Private
- Payments – Private
- Vendors – Controlled by Parent
- Accounts – Private
- Contacts – Controlled by Parent



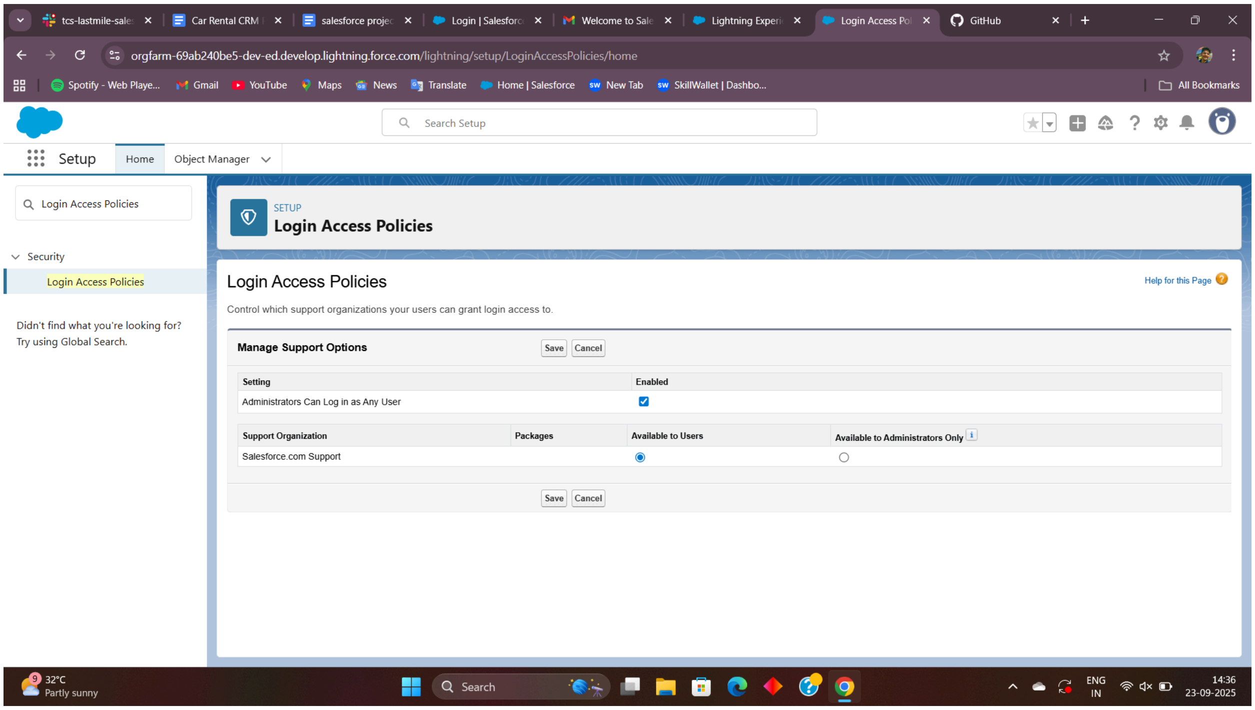
10. <u>Sharing Rules</u> :

- Allow Procurement Head to see all Contracts
- Contractors can only see their own tenders



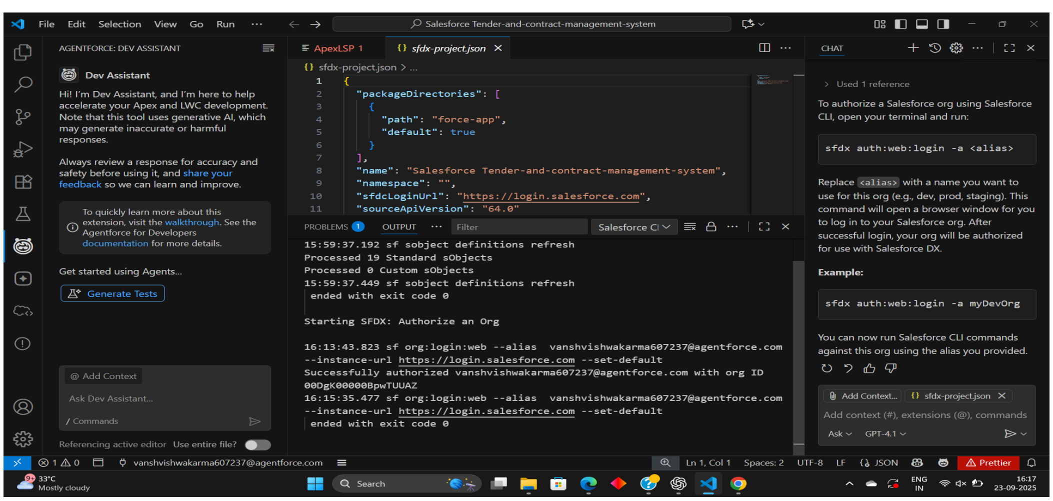
11. Login Access Policies :

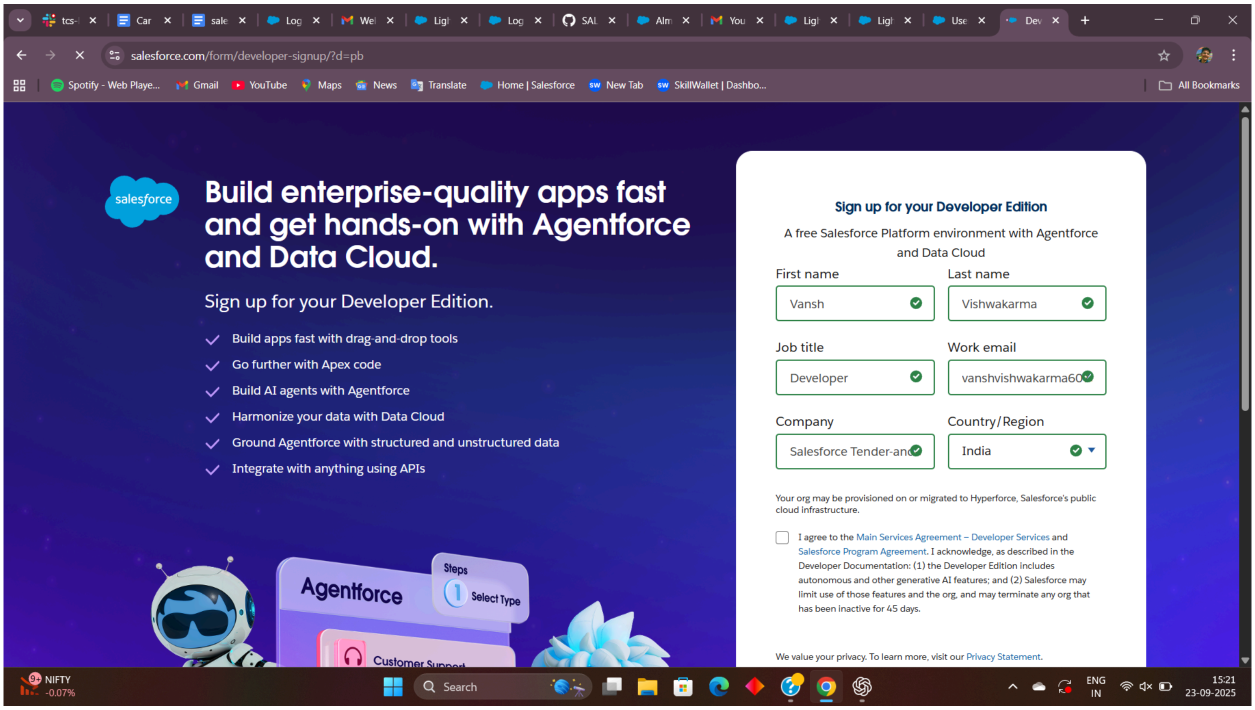
- Define IP Ranges (office-based)
- Set Login Hours (9:00 AM – 7:00 PM)



12. Dev Org Setup :

- Create Developer Org
- Install Salesforce Extensions in VS Code
- Connect Org with Salesforce CLI



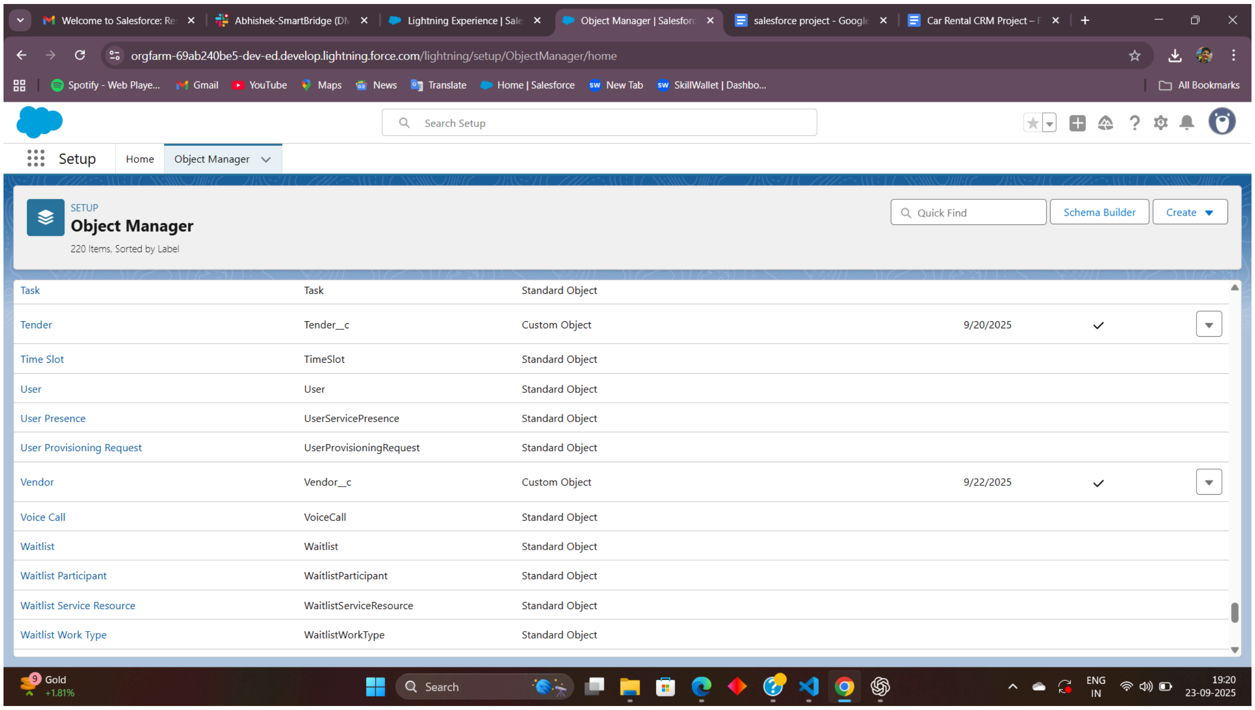


Phase 3: Data Modeling & Relationships

👉 Goal: Build data structure.

1. **Standard & Custom Objects** :
   - Standard Objects
     1. Account → Represents Contractor/Company
     2. Contact → Represents People (Contract Manager, Procurement Officer)
   - User → Internal Salesforce Users (roles like Manager, Bidder)
     1. Tender__c → Stores tender details
     2. Bid__c → Stores bids submitted by contractors
     3. Contract__c → Stores awarded contract details
     4. Project__c → Tracks the project execution linked to contracts
     5. Payment__c → Stores payments made against contracts

NOTE: Here we are creating the object which will help in showing relationship in project.

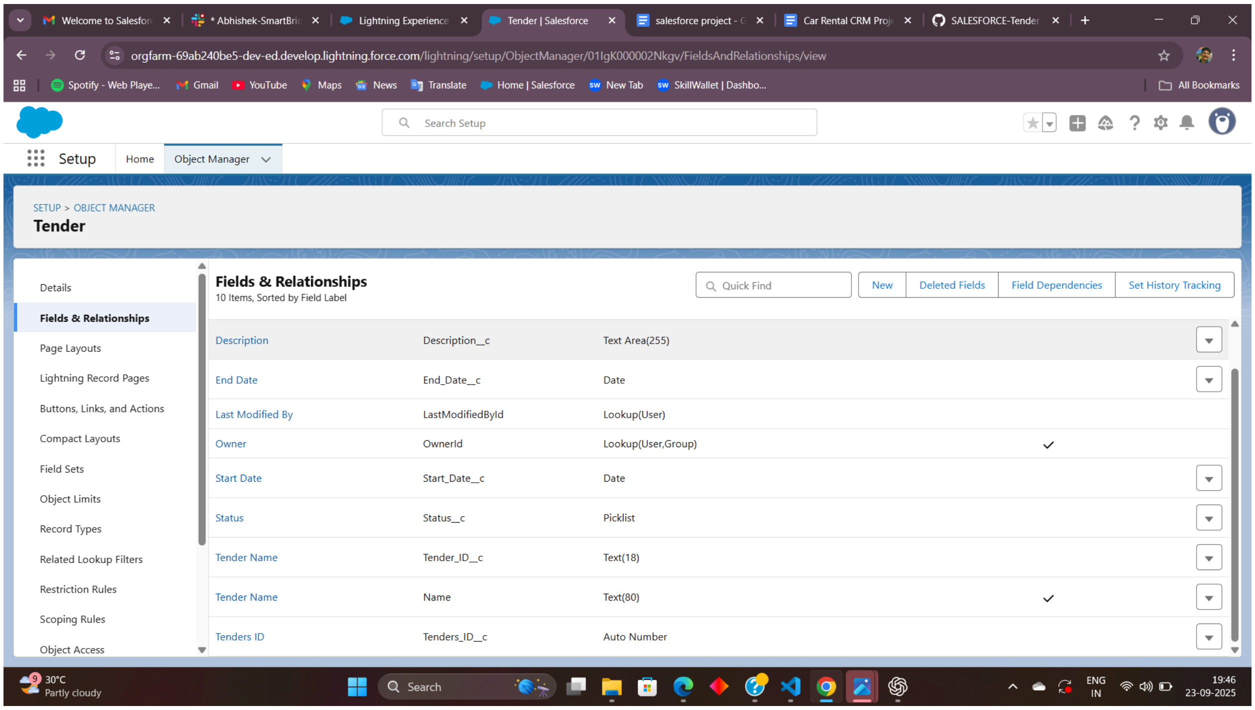


2. <u>**Fields**</u> :

- Tender__c → Tender ID (Auto Number), Tender Name (Text), Status (Picklist: Open/Closed/Awarded)
- Bid__c → Bid ID (Auto Number), Amount (Currency), Status (Picklist: Pending/Approved/Rejected)
- Contract__c → Contract Value (Currency), Start Date (Date), End Date (Date)
- Project__c → Project Name (Text), Location (Text), Progress (%)
- Payment__c → Payment Date (Date), Payment Amount (Currency), Mode (Picklist: Bank Transfer, Cheque, Online)

NOTE : Fields are essentially data containers in Salesforce objects. They define what information you want to store about an object

- **Tender__c**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Object Limits
Record Types
Related Lookup Filters
Restriction Rules
Scoping Rules
Object Access
Fields & Relationships
10 Items, Sorted by Field Label
Quick Find
New
Deleted Fields
Field Dependencies
Set History Tracking
Description Description__c Text Area(255)
End Date End_Date__c Date
Last Modified By LastModifiedById Lookup(User)
Owner OwnerId Lookup(User,Group) ✓
Start Date Start_Date__c Date
Status Status__c Picklist
Tender Name Tender_ID__c Text(18)
Tender Name Name Text(80) ✓
Tenders ID Tenders_ID__c Auto Number
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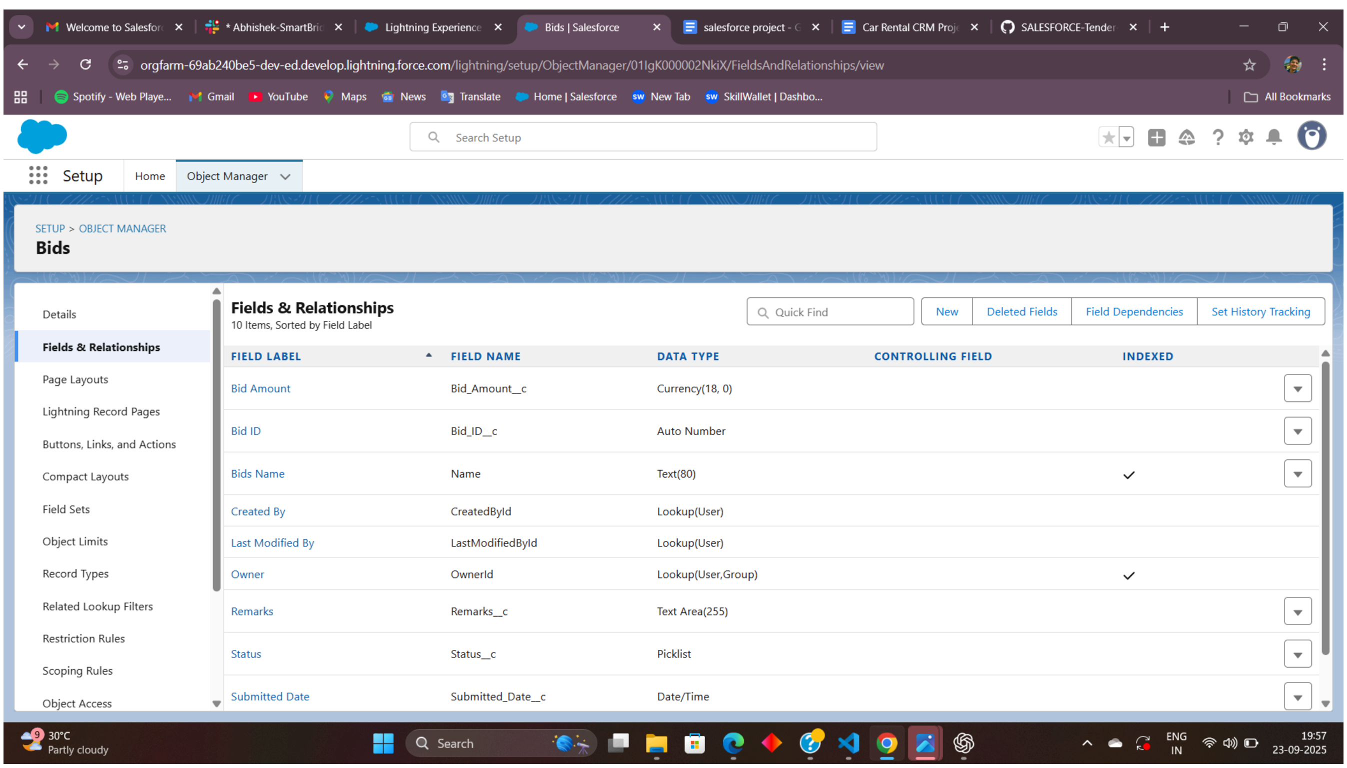
- **Bid__c**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Home
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Page Layouts
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Buttons, Links, and Actions
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Object Limits
Record Types
Related Lookup Filters
Restriction Rules
Scoping Rules
Object Access
Fields & Relationships
10 Items, Sorted by Field Label
Quick Find
New
Deleted Fields
Field Dependencies
Set History Tracking
FIELD LABEL FIELD NAME DATA TYPE CONTROLLING FIELD INDEXED
Bid Amount Bid_Amount__c Currency(18, 0)
Bid ID Bid_ID__c Auto Number
Bids Name Name Text(80) ✓
Created By CreatedById Lookup(User)
Last Modified By LastModifiedById Lookup(User)
Owner OwnerId Lookup(User,Group) ✓
Remarks Remarks__c Text Area(255)
Status Status__c Picklist
Submitted Date Submitted_Date__c Date/Time
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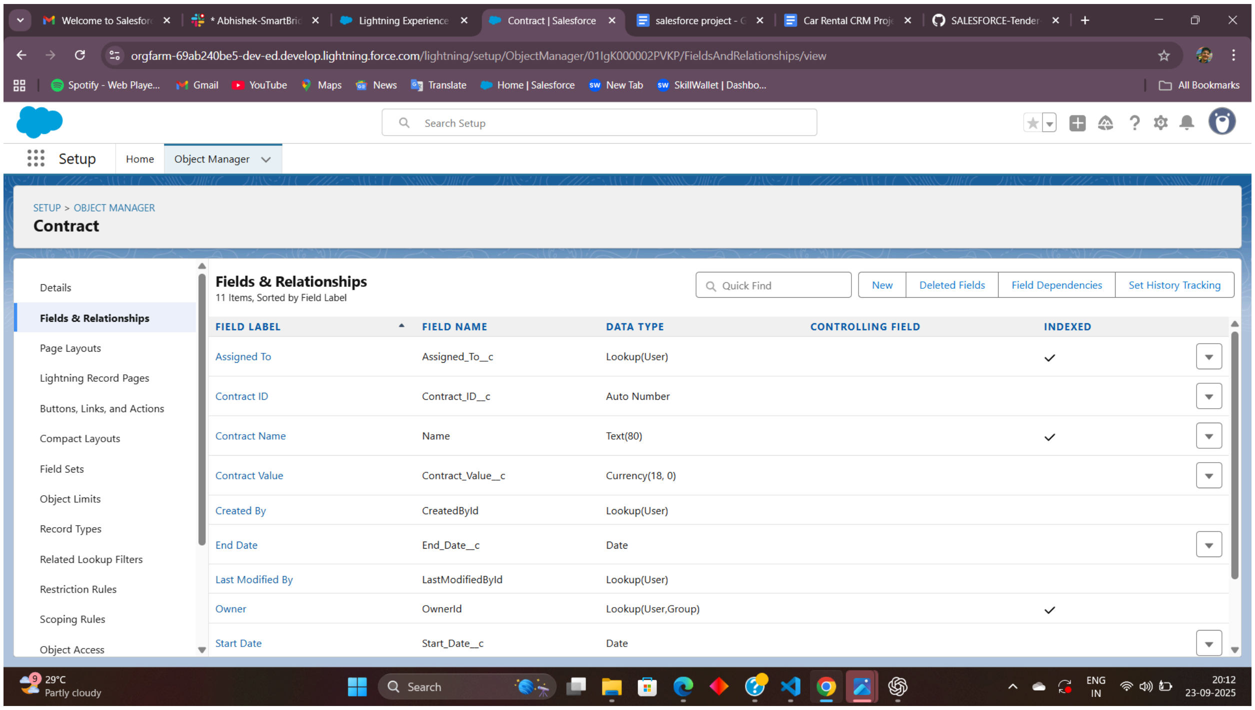
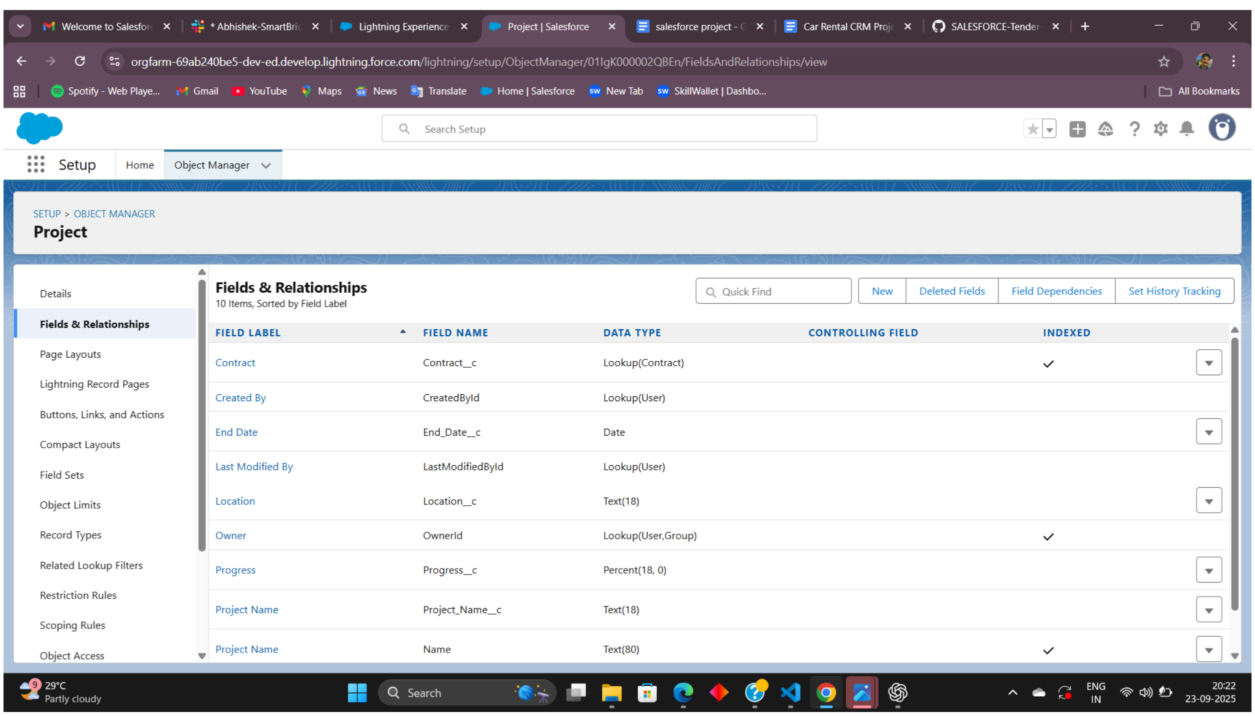
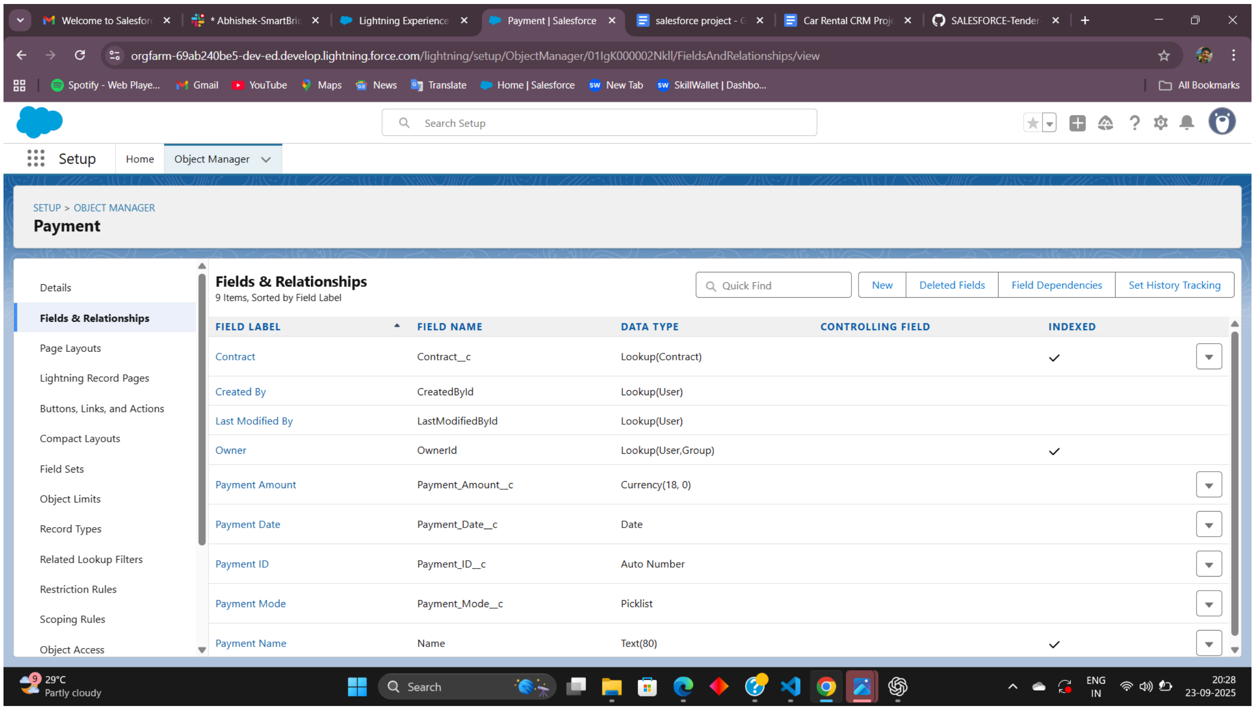
○ **Contract__c :**



● **Project__c :**

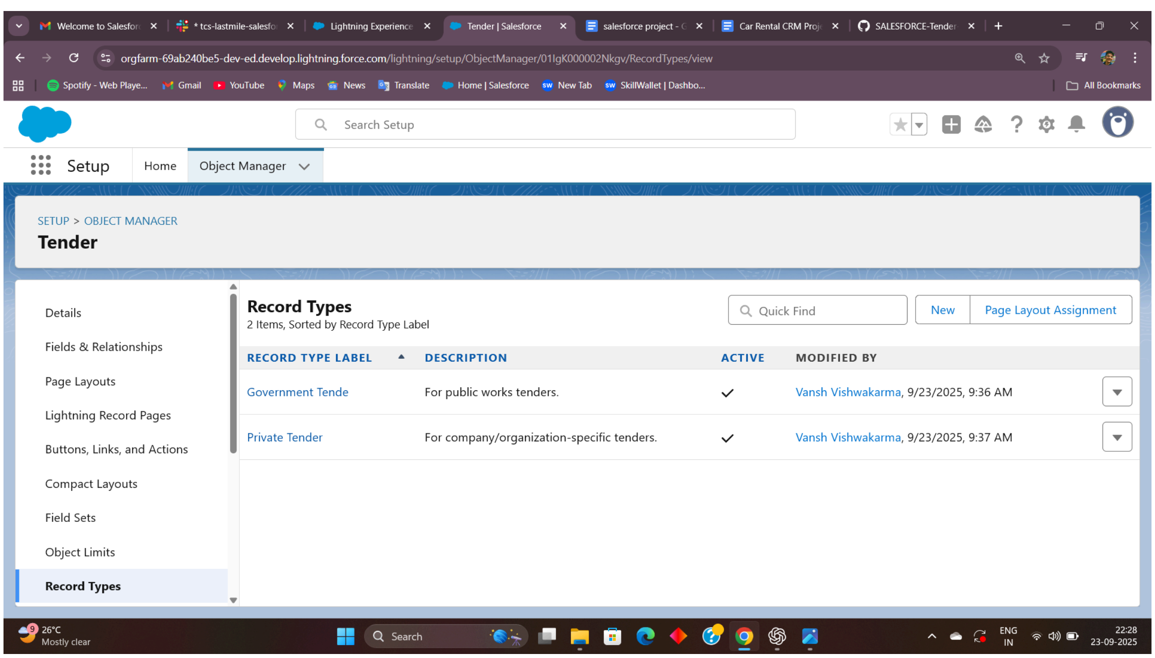


○ **<u>Payment__c</u> :**



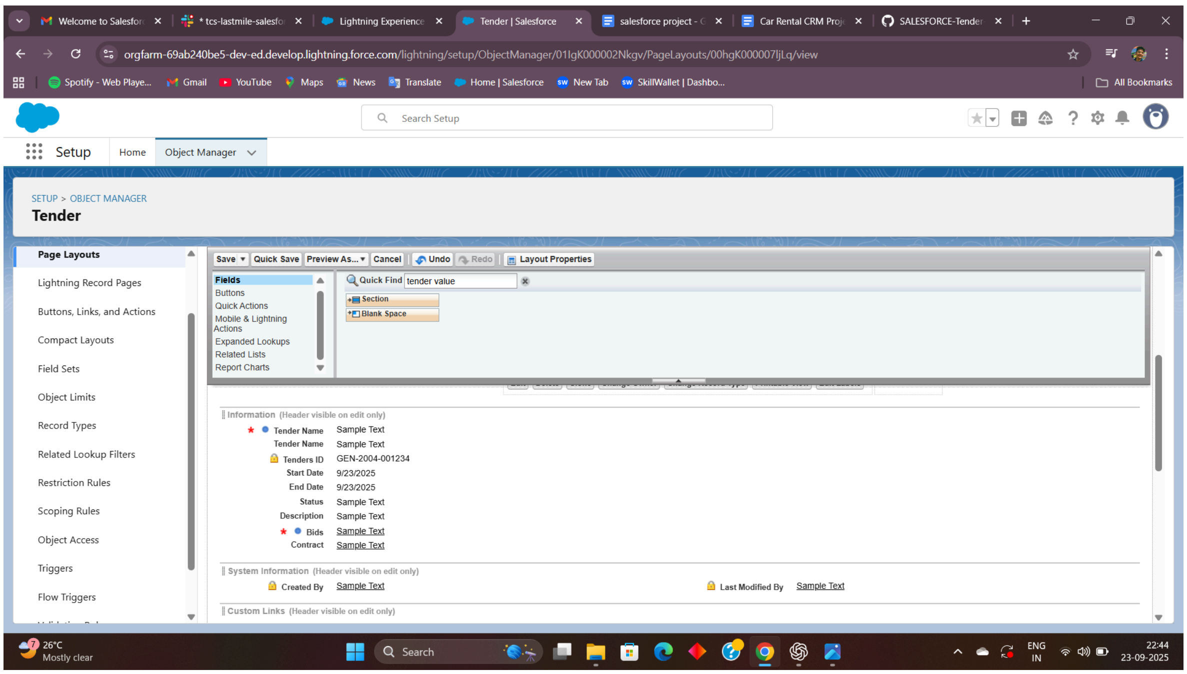
3. <u>Record Types</u> :

- Tender__c → Govt Tender, Private Tender
- Contract__c → Short-Term, Long-Term



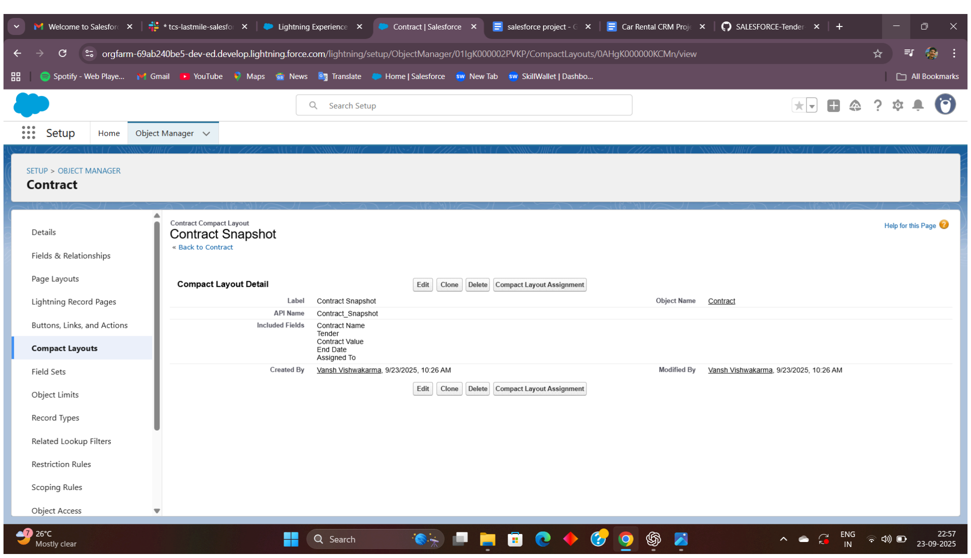
4 . <u>Page Layouts</u> :

- Tender__c → Fields arranged for Procurement Officers (Name, Status, Start/End Dates, Related Bids)
- Bid__c → Layout for Bidders (Amount, Submitted Date, Tender Reference)
- Contract__c → Layout for Managers (Contract Value, Status, Related Payments/Projects)



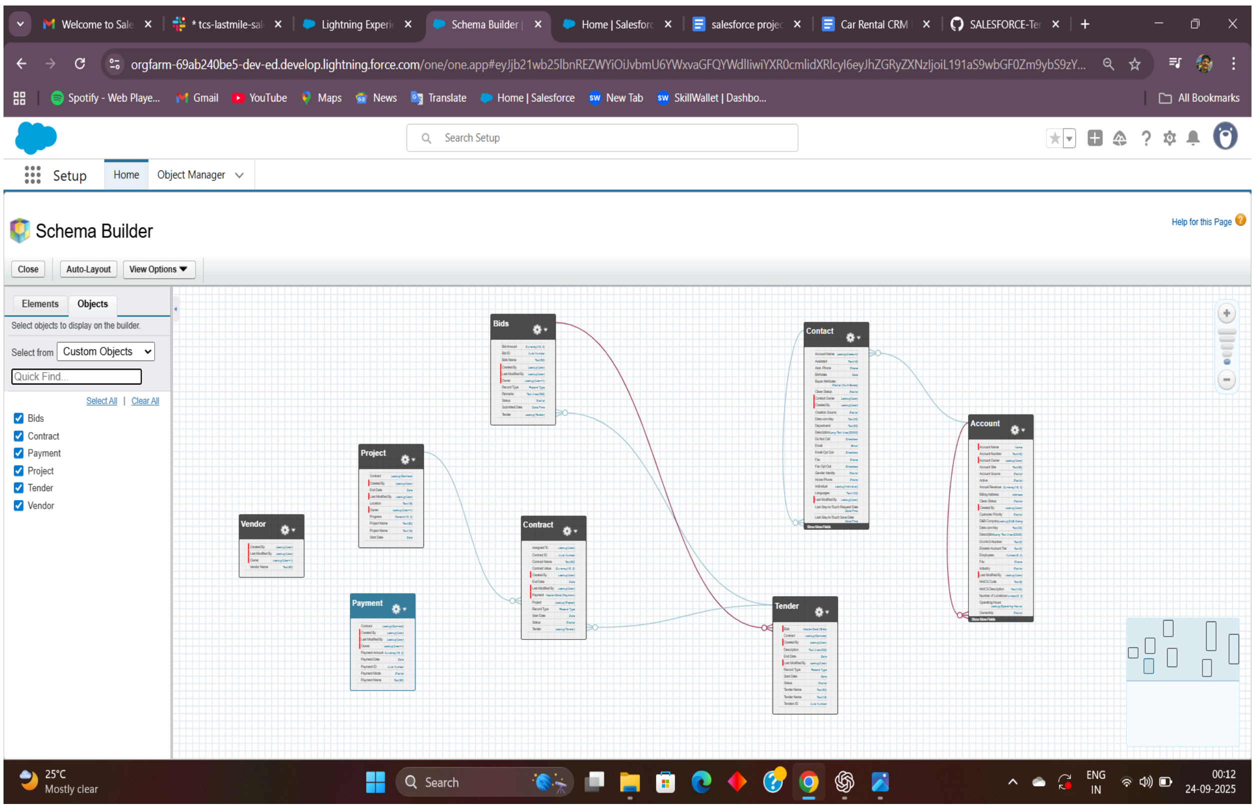
5. <u>Compact Layouts</u> :

- Tender__c → Show Tender Name, Status, Start Date, End Date
- Bid__c → Show Bid ID, Amount, Status
- Contract__c → Show Contract ID, Value, Status



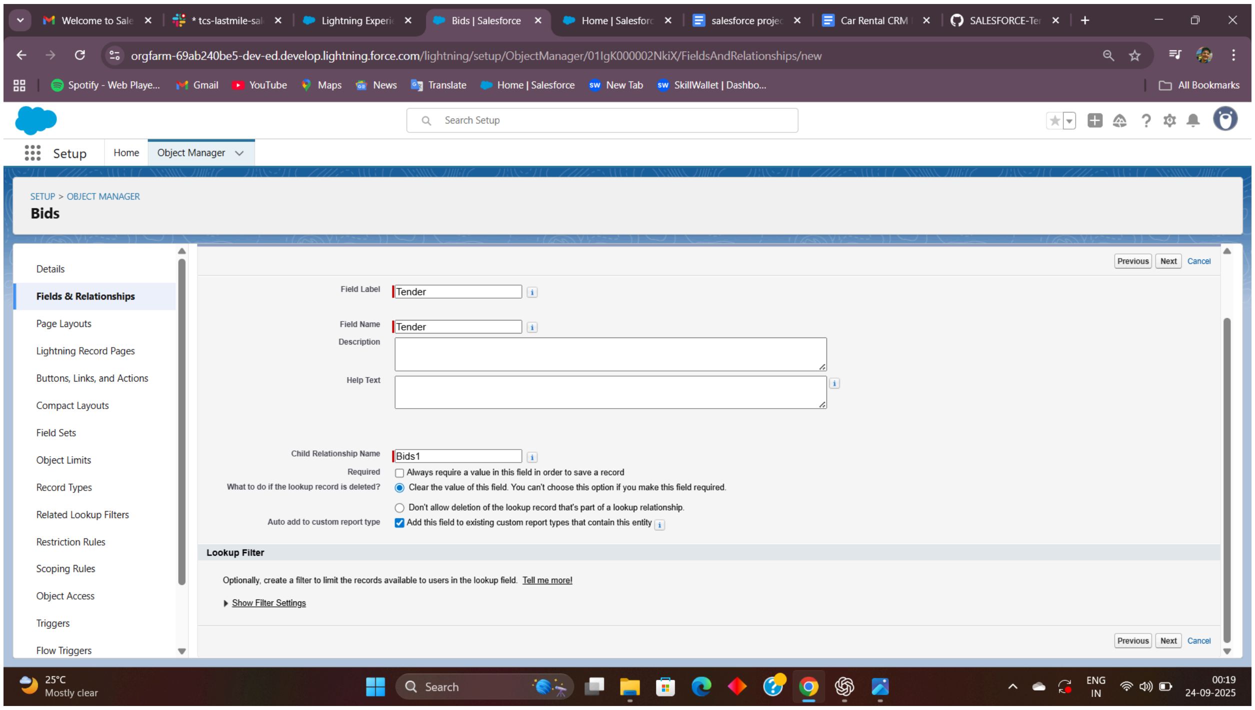
6. <u>Schema Builder</u> :

- Use Setup → Schema Builder
- Add Tender__c, Bid__c, Contract__c, Project__c, Payment__c
- Draw relationships between them → this acts as your ERD (Entity Relationship Diagram).



7. <u>Lookup vs Master-Detail vs Hierarchical</u> :

- Tender__c → Bid__c = Master-Detail (One Tender, many Bids)
- Tender__c → Contract__c = Lookup (One Tender leads to one Contract)
- Contract__c → Payment__c = Master-Detail (One Contract has many Payments)
- Contract__c → Project__c = Lookup (Link Project execution to Contract)
- User Hierarchy (Role Reporting) = Hierarchical



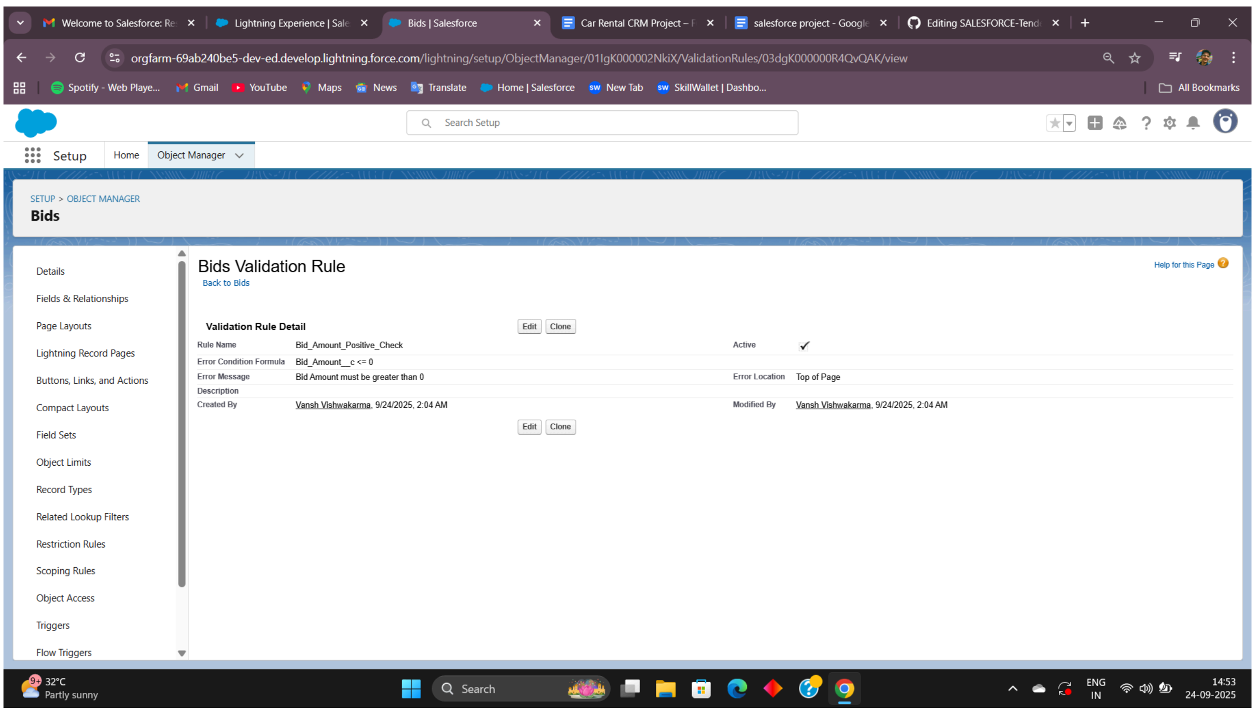
Phase 4: Process Automation (Admin)

👉 Goal: Automate tasks.

1. Validation Rules :

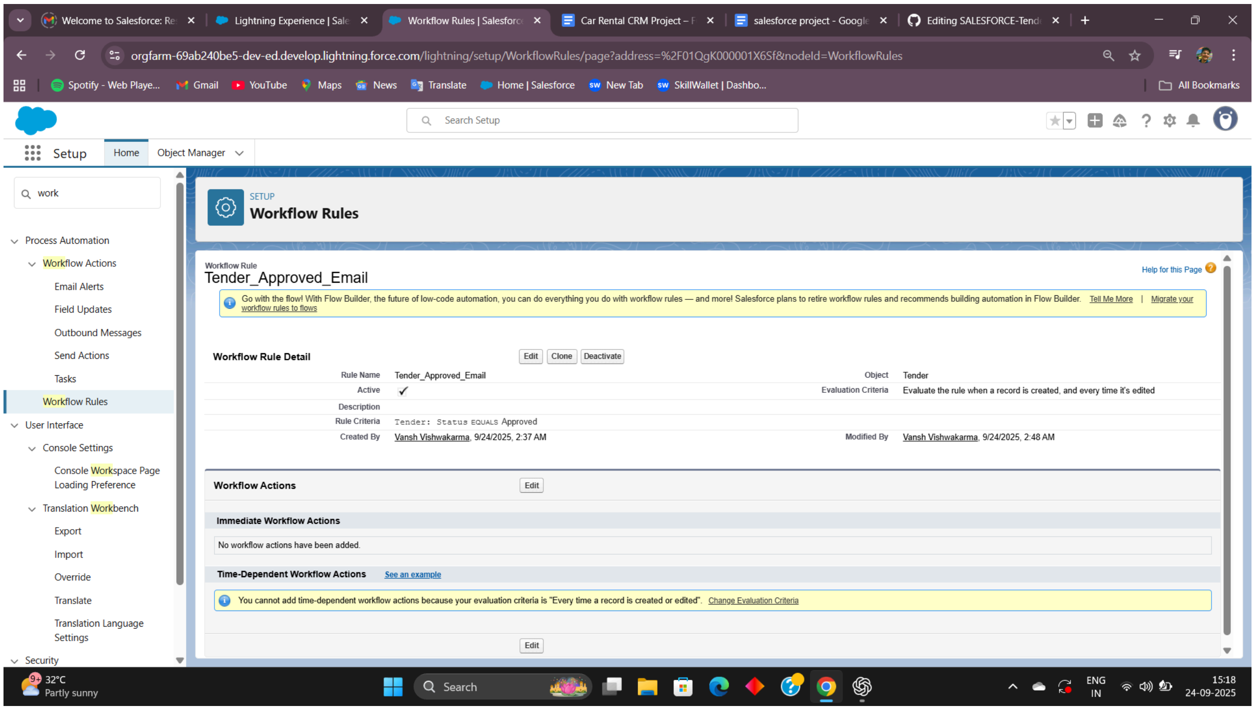
- Validation rules are used to ensure data integrity by preventing users from saving invalid data. Below are the rules created for each object:
- Tender__c (End Date Check)
  - Logic: The End Date cannot be earlier than the Start Date.
  - Error Message: *"End Date cannot be before Start Date."*
- Bid__c (Bid Amount Positive Check)
  - Logic: The Bid Amount should always be greater than zero.
  - Error Message: *"Bid Amount must be greater than 0."*

- Contract__c (Contract Value Positive Check)
    - Logic: The Contract Value must be greater than zero.
    - Error Message: *“Contract Value must be greater than 0.”*
- Payment__c (Payment Date Check)
    - Logic: The Payment Date should not be later than the Contract End Date.
    - Error Message: *“Payment Date cannot exceed Contract End Date.”*



2. <u>**Workflow Rules** (legacy)</u> :

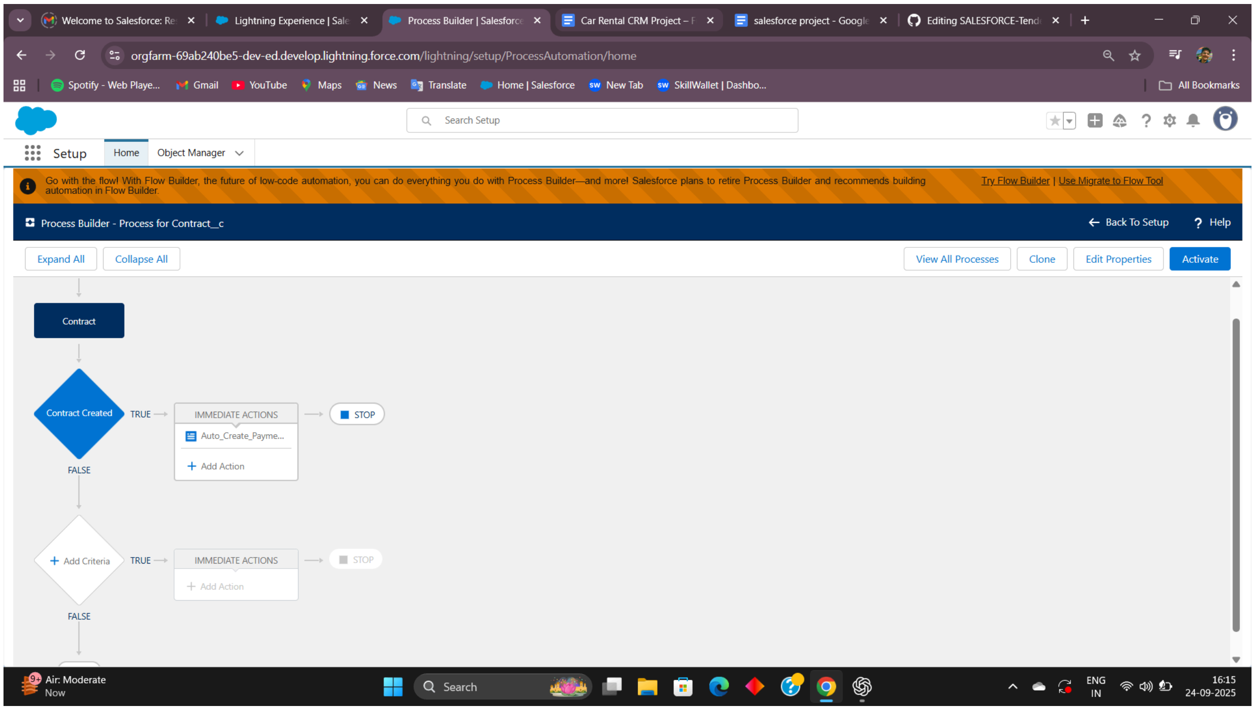
- <u>Tender Object (Tender__c)</u>:
 When the Status of a Tender becomes Approved, the system will automatically send an Email Alert to the Procurement Officer.
- <u>Bid Object (Bid__c):</u>
 When the Status of a Bid is set to Submitted, a Task will be generated to notify the Project Manager about the new bid.
- <u>Contract Object (Contract__c):</u>
 When the Status of a Contract is marked as Signed, a Field Update will occur automatically, changing the related Tender’s status to Closed.



3. **Process Builder** (legacy) :

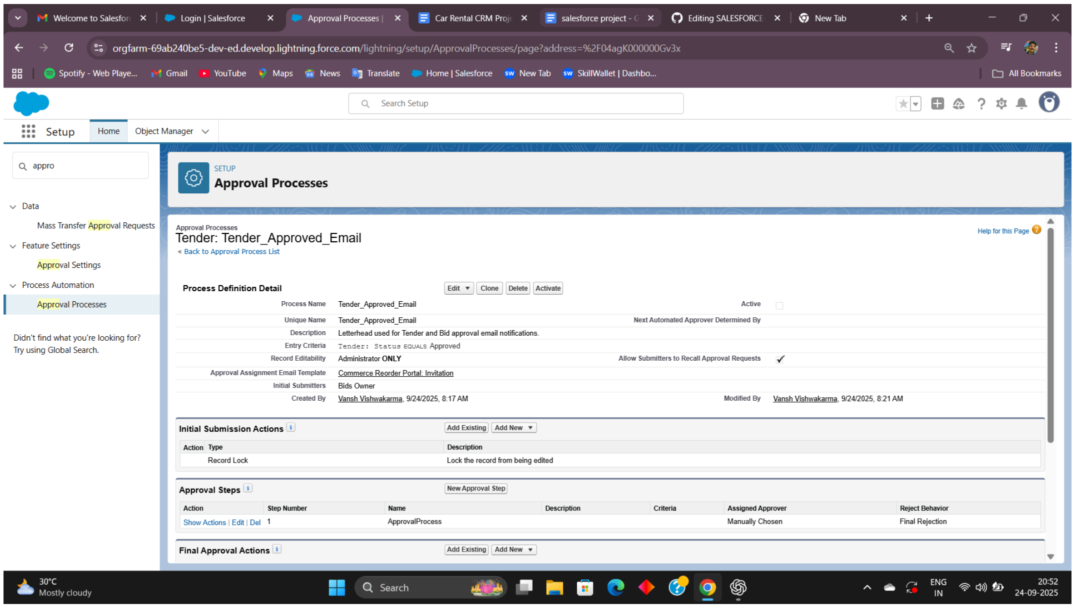
Automate multi-step business logic.

- Object Criteria Action
- Bid__c Status = Submitted Update Tender Status → "Bids Received", Send Email Notification
- Contract__c Contract Created Auto-create Payment records for milestones
- Tender__c Status = Cancelled Update all related Bids → Status = Cancelled



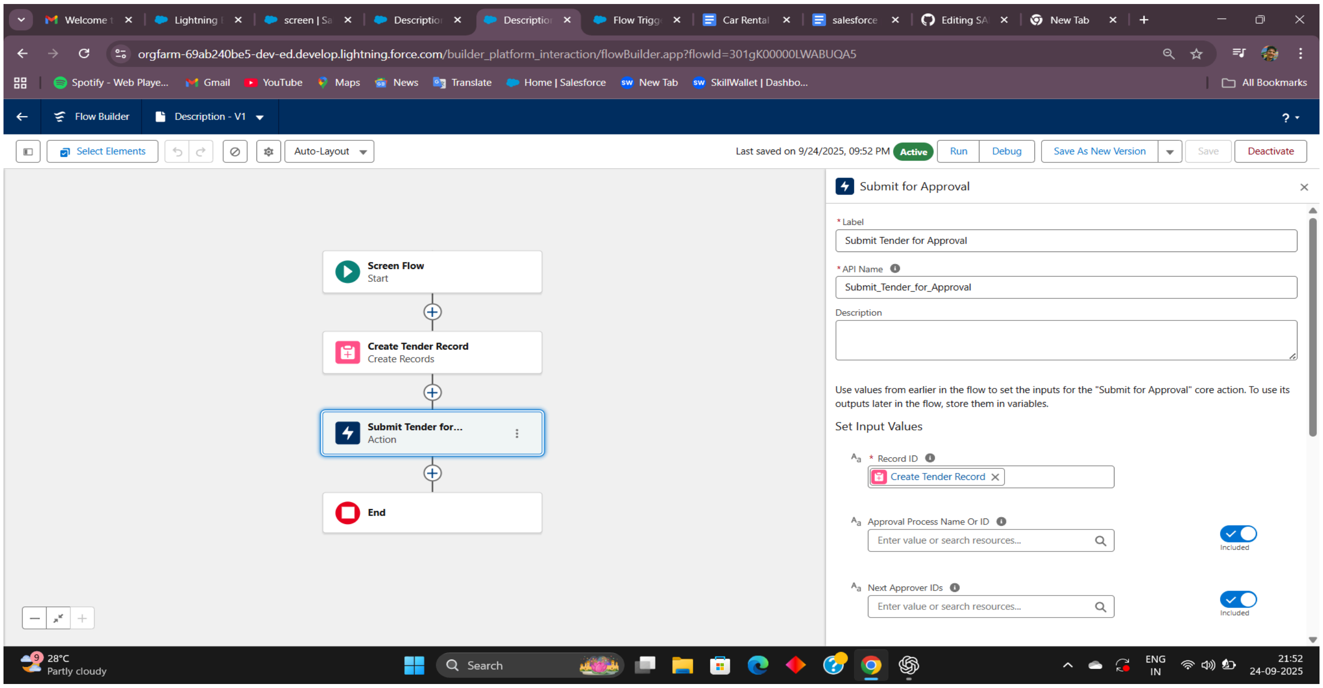
4. <u>Approval Process</u> :

- Automate approvals for Tenders and Bids.
- Tender Approval Flow:
- Procurement Officer submits Tender → Project Manager approval
- Project Manager approves → Director approval
- Final Approval → Status = Approved + Email notification
- Rejection → Status = Rejected + Email notification
- Bid Approval Flow:
- Bid submitted → Procurement Officer review
- Approval → Status = Approved, Tender updated
- Rejection → Status = Rejected, Bidder notified



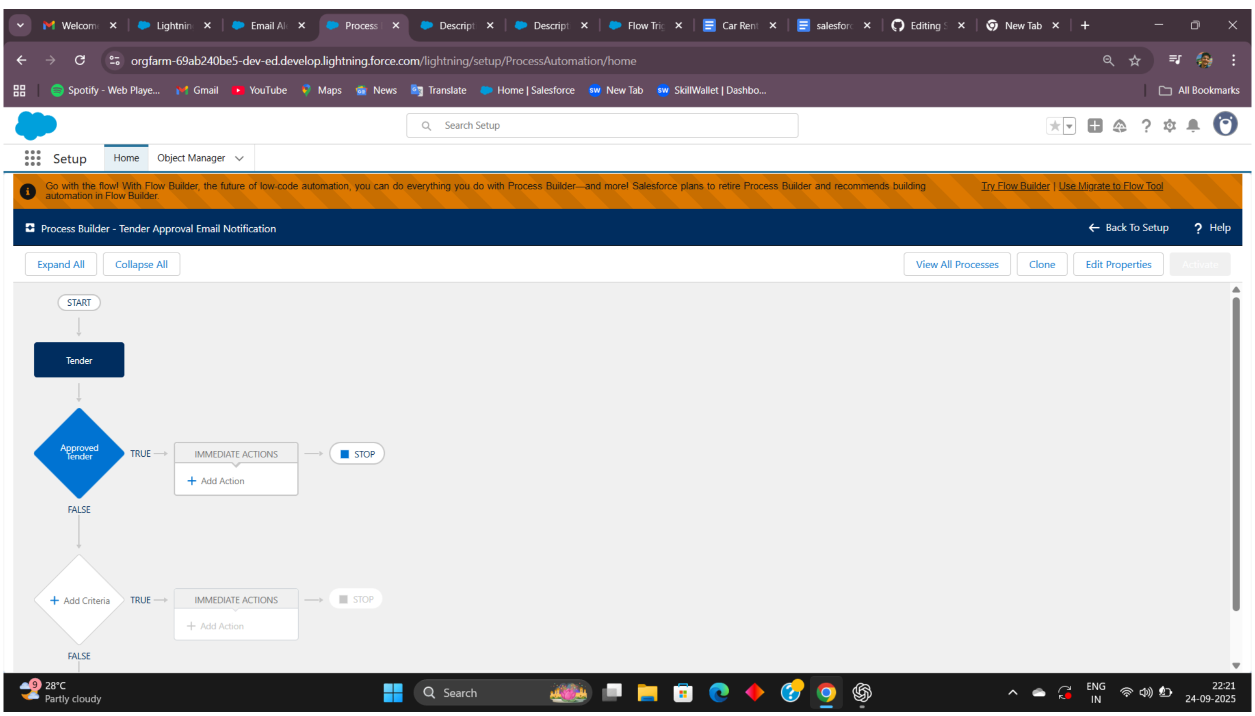
5. **Flow Builder** :

- Automate complex processes using flows.
- Flow Type   Object Purpose   Key Steps
- Screen Flow   Tender__c   Submission form for Procurement Officer   Input   Tender details → Upload documents → Submit for Approval.



6. <u>Email Alerts</u> :

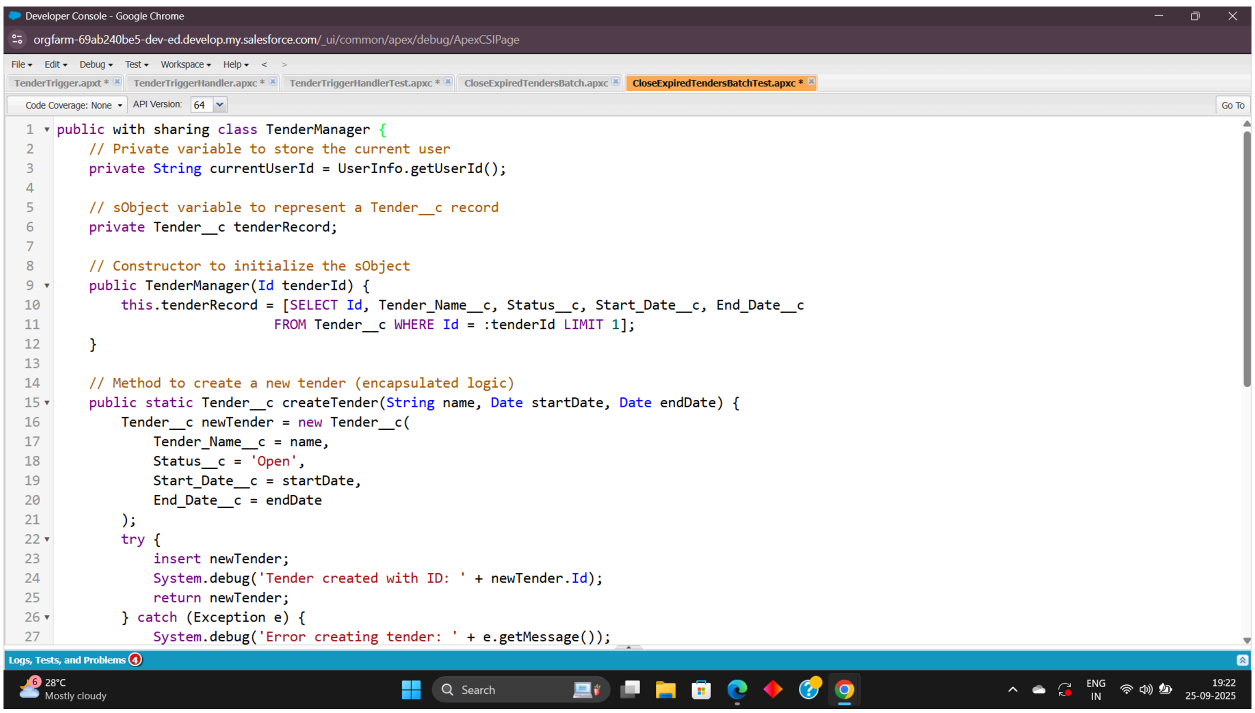
Customer email after approval.



Phase 5: Apex Programming (Developer)

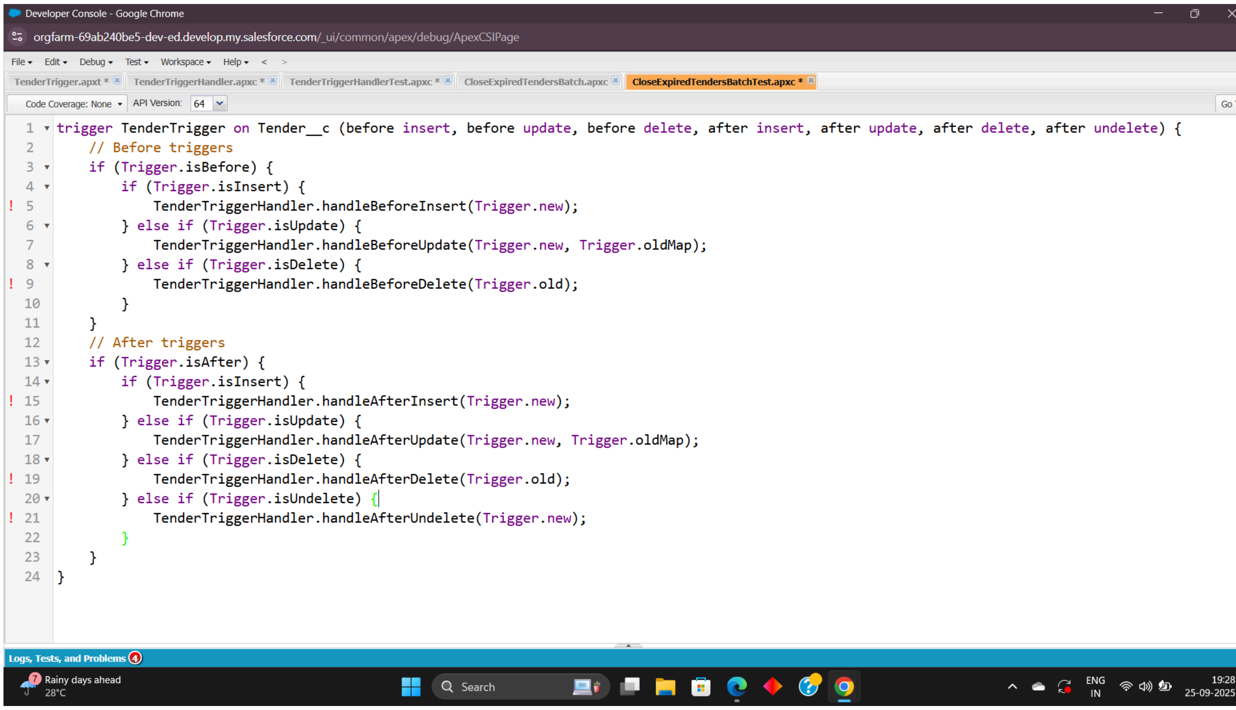
1. Classes & Objects

- Encapsulate logic in Apex Classes for reusability and modularity.
- Create objects (variables, sObjects) to represent and manipulate Salesforce
- records.



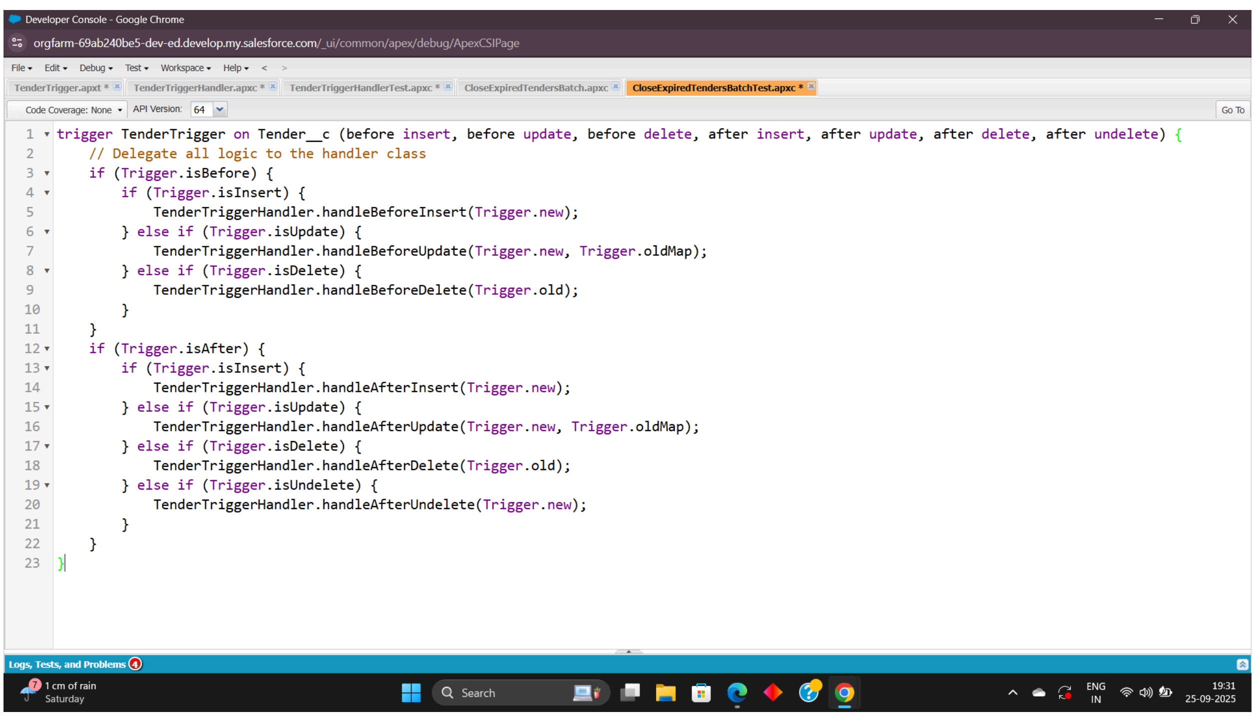
2. Apex Triggers (before/after insert/update/delete)

- Automate actions on Salesforce records when they are created, updated, deleted, or undeleted



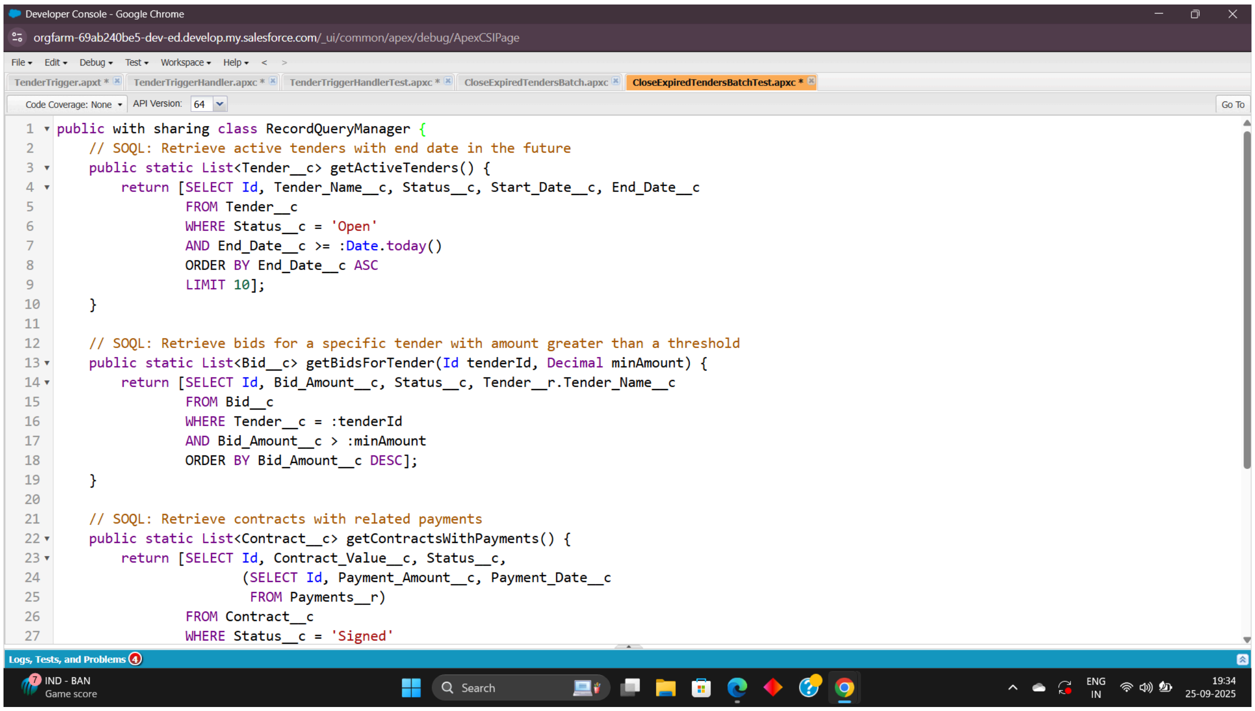
3. Trigger Design Pattern :

- Use one trigger per object.
- Delegate logic to a handler class to keep triggers clean and maintainable.



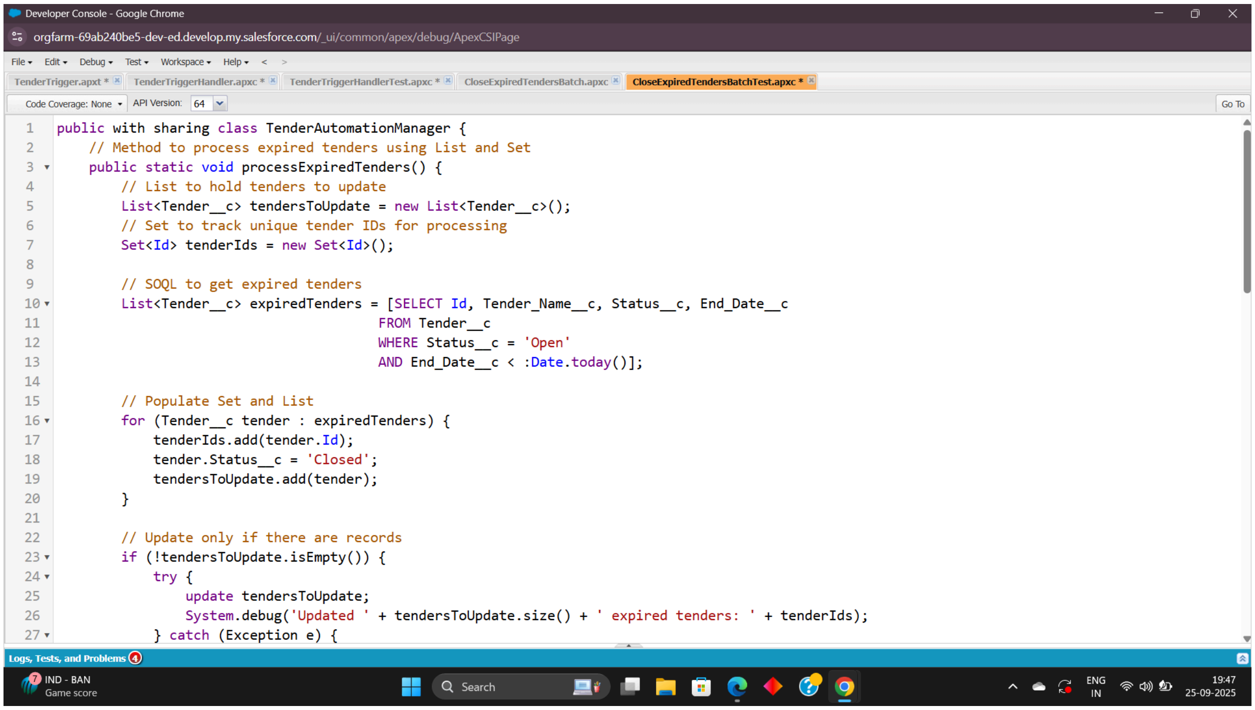
4. SOQL & SOSL :

- SOQL (Salesforce Object Query Language) → Query Salesforce records.
- SOSL (Salesforce Object Search Language) → Search text across multiple objects.



5. Collections: List, Set, Map :

- List: Ordered collection of records.
- Set: Unique collection of values.
- Map: Key-value pair collection, useful for fast lookups.
- Automate periodic tasks, like daily updates, reminders, or calculations.



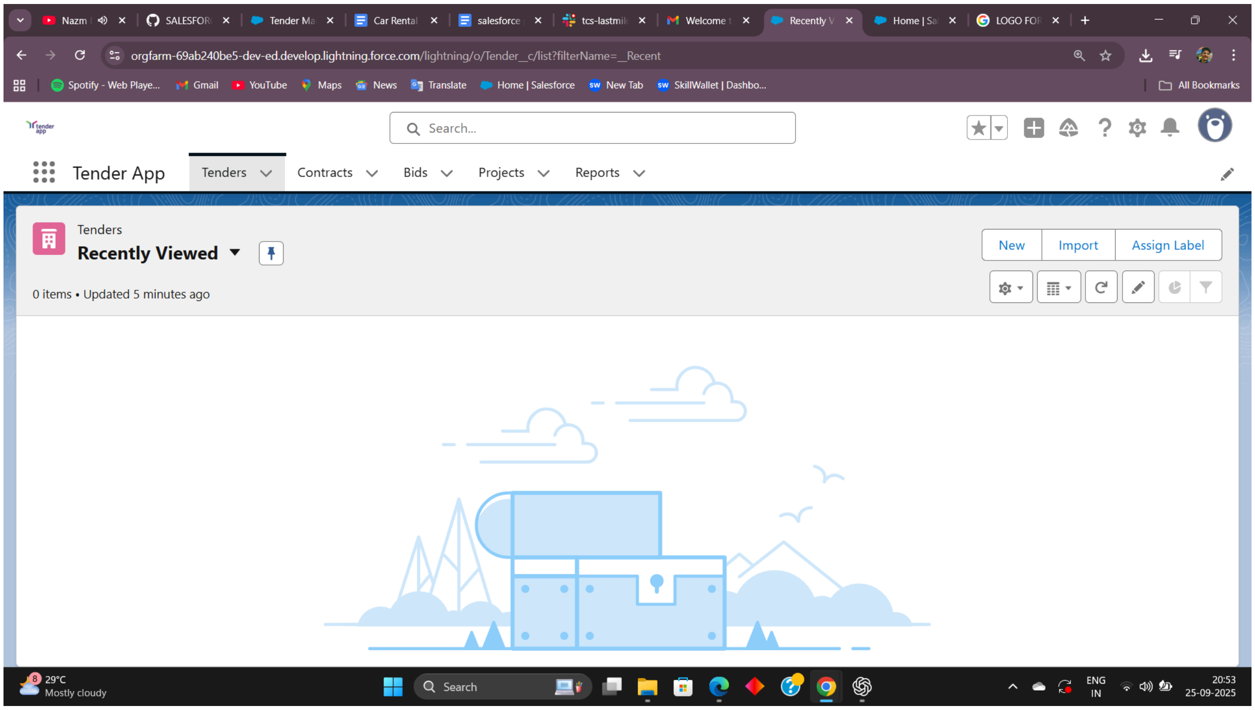

```
public with sharing class TenderAutomationManager {
    // Method to process expired tenders using List and Set
    public static void processExpiredTenders() {
        // List to hold tenders to update
        List<Tender__c> tendersToUpdate = new List<Tender__c>();
        // Set to track unique tender IDs for processing
        Set<Id> tenderIds = new Set<Id>();

        // SOQL to get expired tenders
        List<Tender__c> expiredTenders = [SELECT Id, Tender_Name__c, Status__c, End_Date__c
                                          FROM Tender__c
                                          WHERE Status__c = 'Open'
                                          AND End_Date__c < :Date.today()];

        // Populate Set and List
        for (Tender__c tender : expiredTenders) {
            tenderIds.add(tender.Id);
            tender.Status__c = 'Closed';
            tendersToUpdate.add(tender);
        }

        // Update only if there are records
        if (!tendersToUpdate.isEmpty()) {
            try {
                update tendersToUpdate;
                System.debug('Updated ' + tendersToUpdate.size() + ' expired tenders: ' + tenderIds);
            } catch (Exception e) {
```

Phase 6: User Interface Development

👉 Goal: Make it user-friendly.

1. **Lightning App Builder :**

    - Purpose: Build custom user interfaces without coding.
    - What to Do:
    - Navigate to Setup → Lightning App Builder.
    - Create Custom Pages for different user groups (Procurement Officer, Project Manager, Director).
    - Add components like Related Lists, Tabs, Reports, and LWCs.

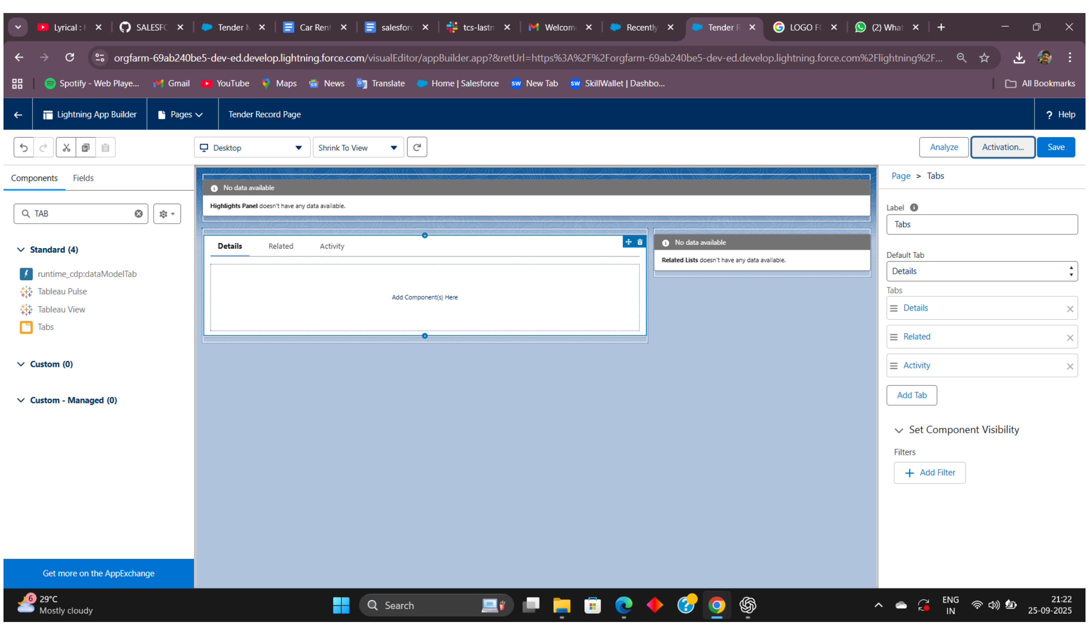


2. Record Pages :

- Purpose: Customize how records (Tender, Bid, Contract, Payment) appear

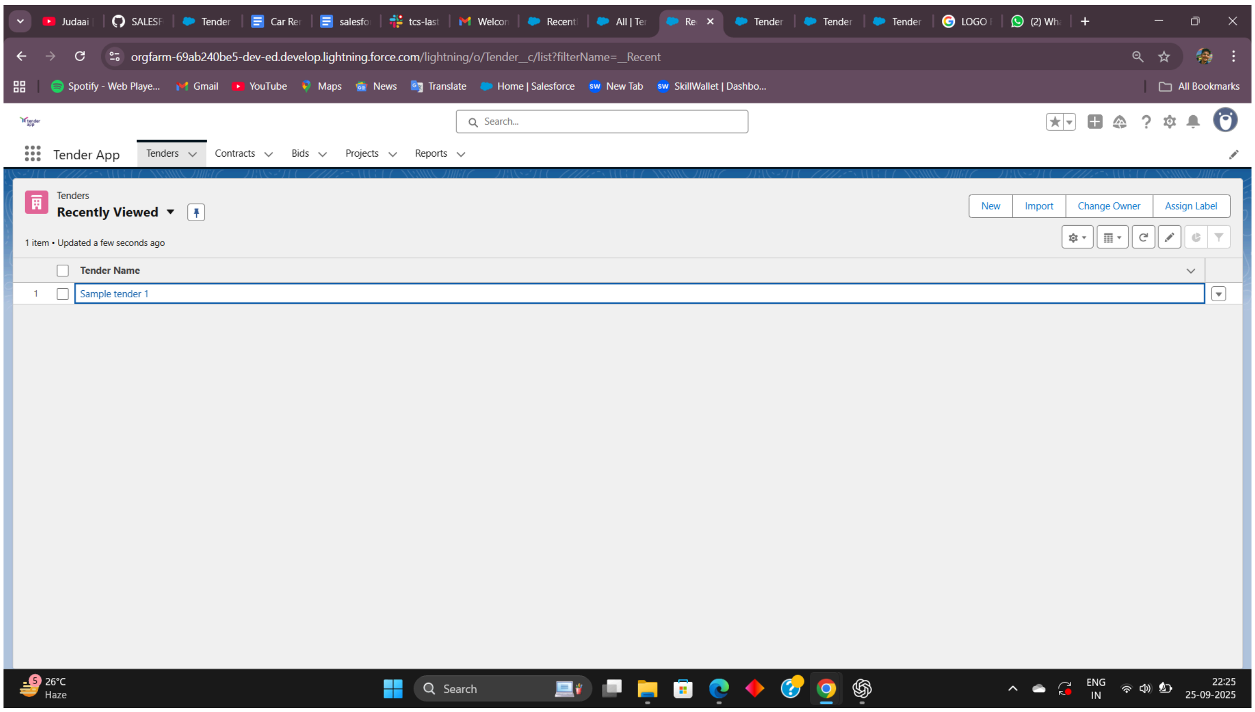
Steps:

- Go to Object Manager → Tender → Lightning Record Pages
- Add Highlights Panel, Tabs (Details, Related, Notes).
- Insert Custom LWCs (like Tender Summary).



3. Tabs :

- Purpose: Provide quick navigation for custom objects.
- Steps:
- Setup → Tabs → New Custom Object Tab.
- Add Tabs for Tender, Bid, Contract, Payment.
- Assign to App Navigation.

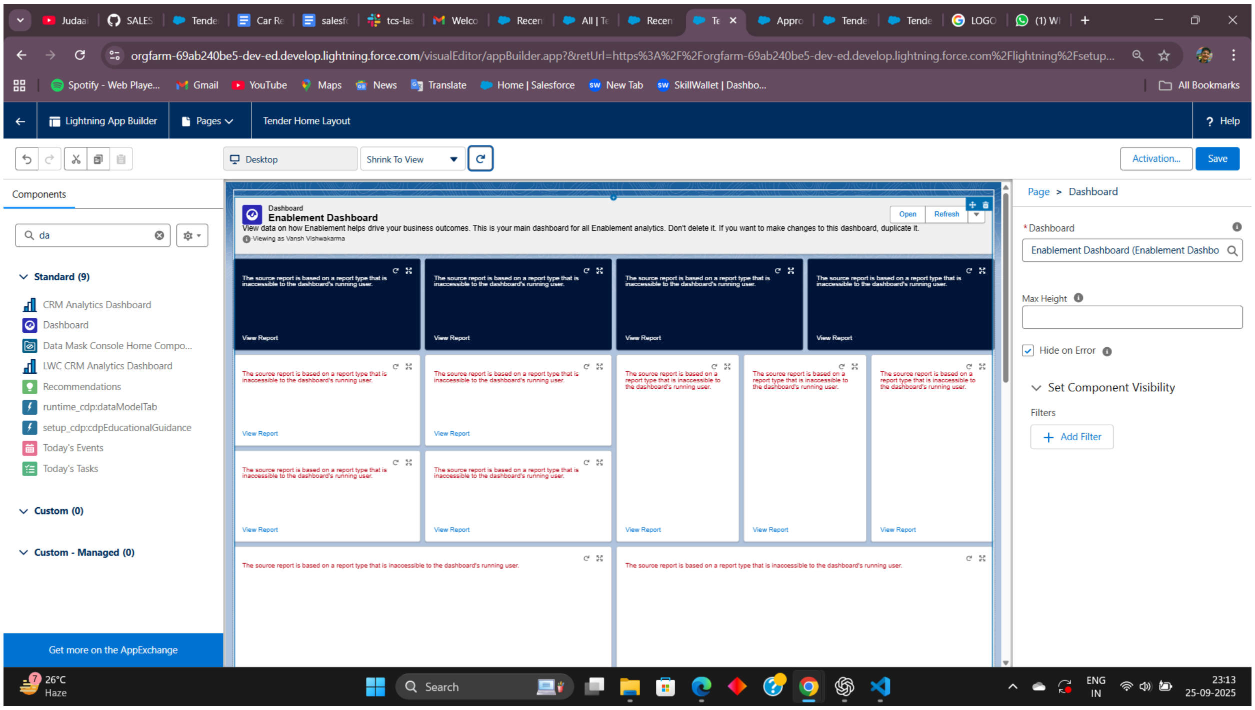


4. Home Page Layouts :

- Purpose: Customize the Salesforce Home page.

Steps:

- Setup → Lightning App Builder → Home Page.
- Add
- Reports/Charts
- Tasks List.
- Approvals Pending.
- Custom Notifications panel.

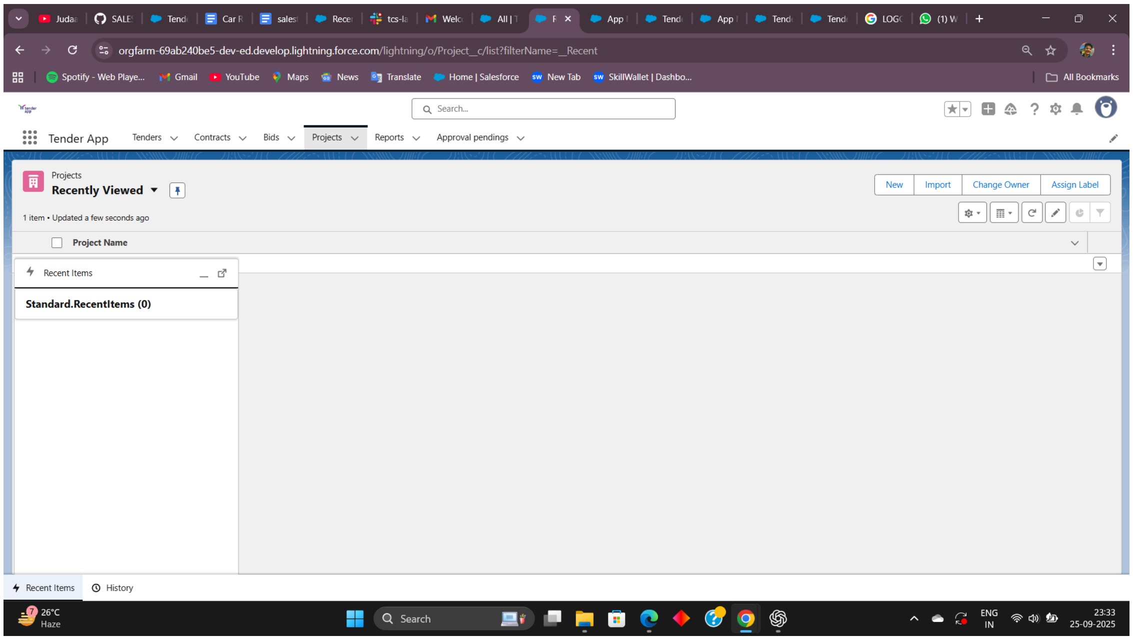


5. <u>Utility Bar</u> :

- Purpose: Provide quick access to tools at the bottom of the screen.

<u>Examples</u>:

- Add Notes.
- Add Recent Items.
- Add History .

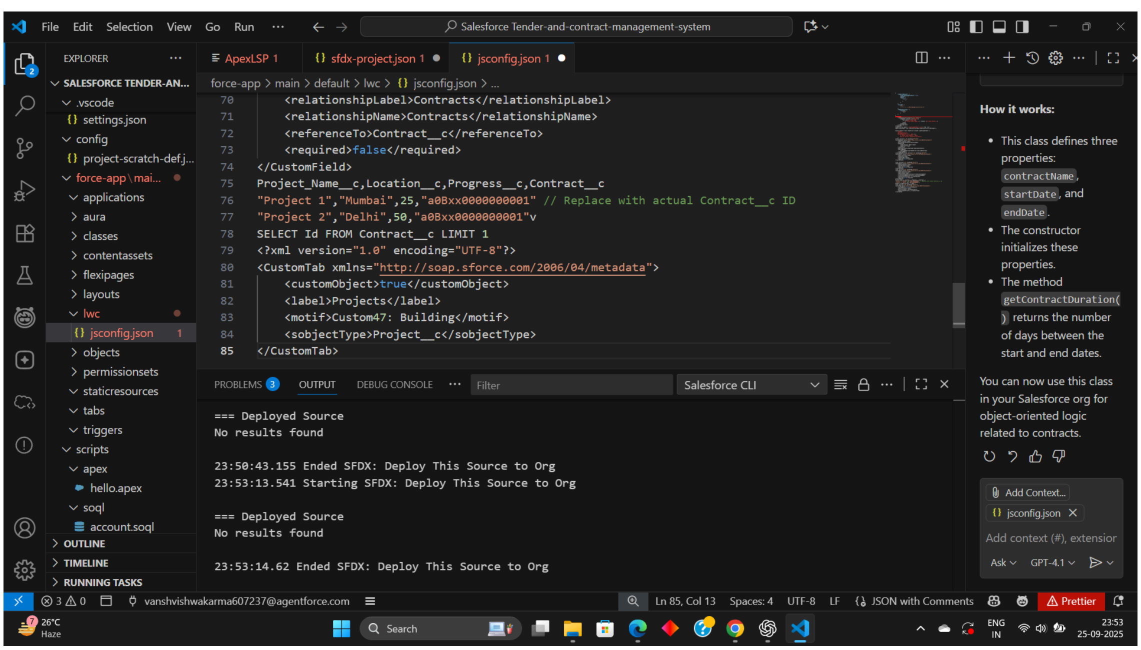


6. <u>LWC</u> :

- Purpose: Build custom UI with JavaScript, HTML, and Apex integration.

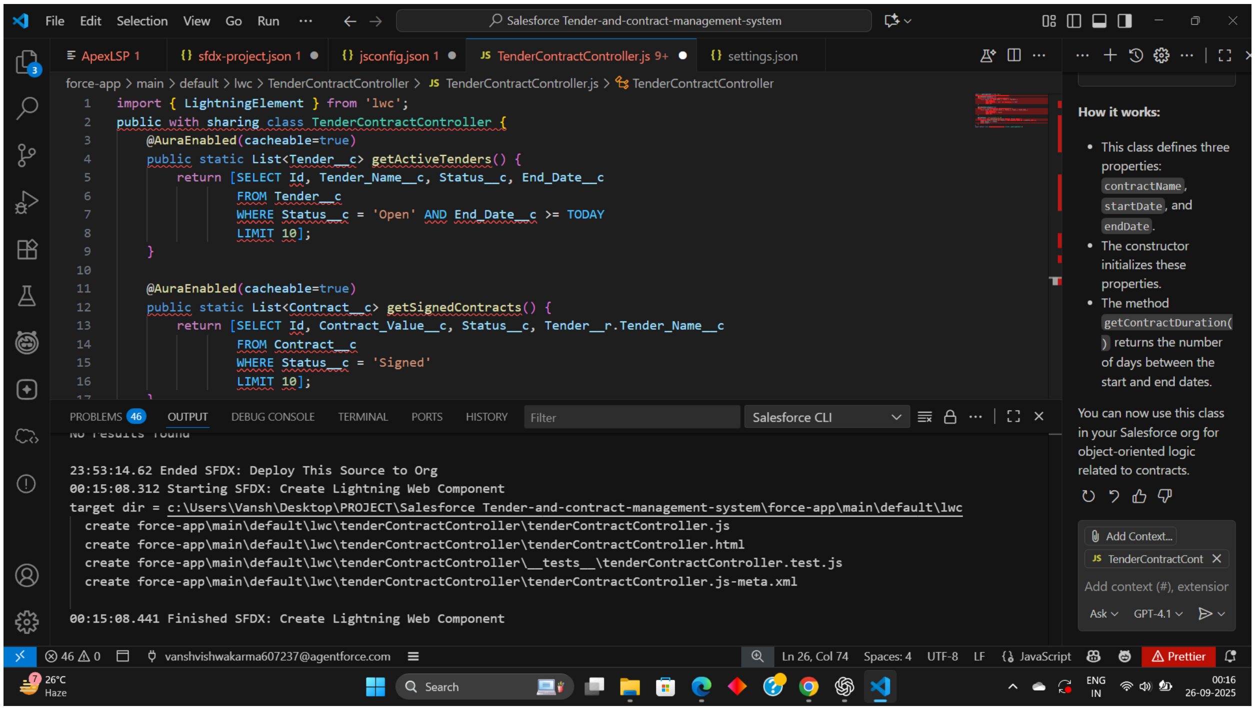
<u>Examples for Tender App</u>:

- Tender Summary Component → Displays all bids and total amount.
- Bid Submission Form → Allows users to enter and submit a bid.
- Contract Dashboard → Shows contract progress and payments.



7. Apex with LWC :

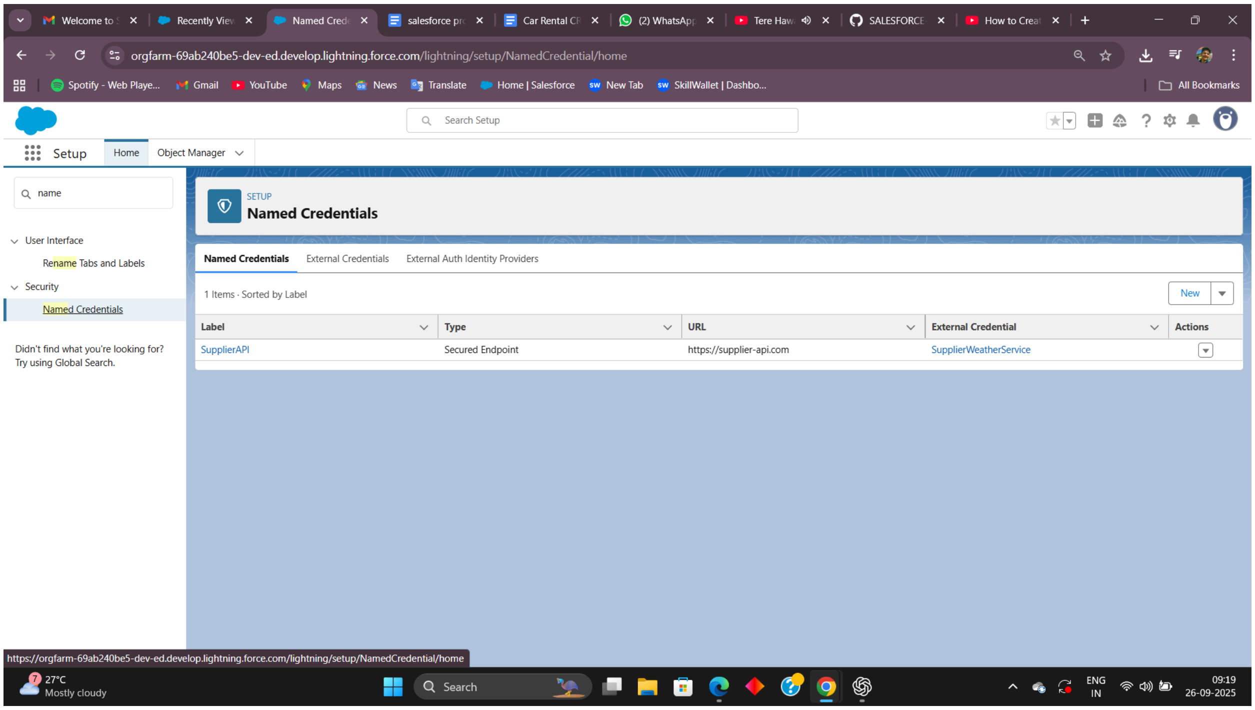
Purpose: Fetch Salesforce data via Apex into LWCs.



Phase 7: Integration & External Access

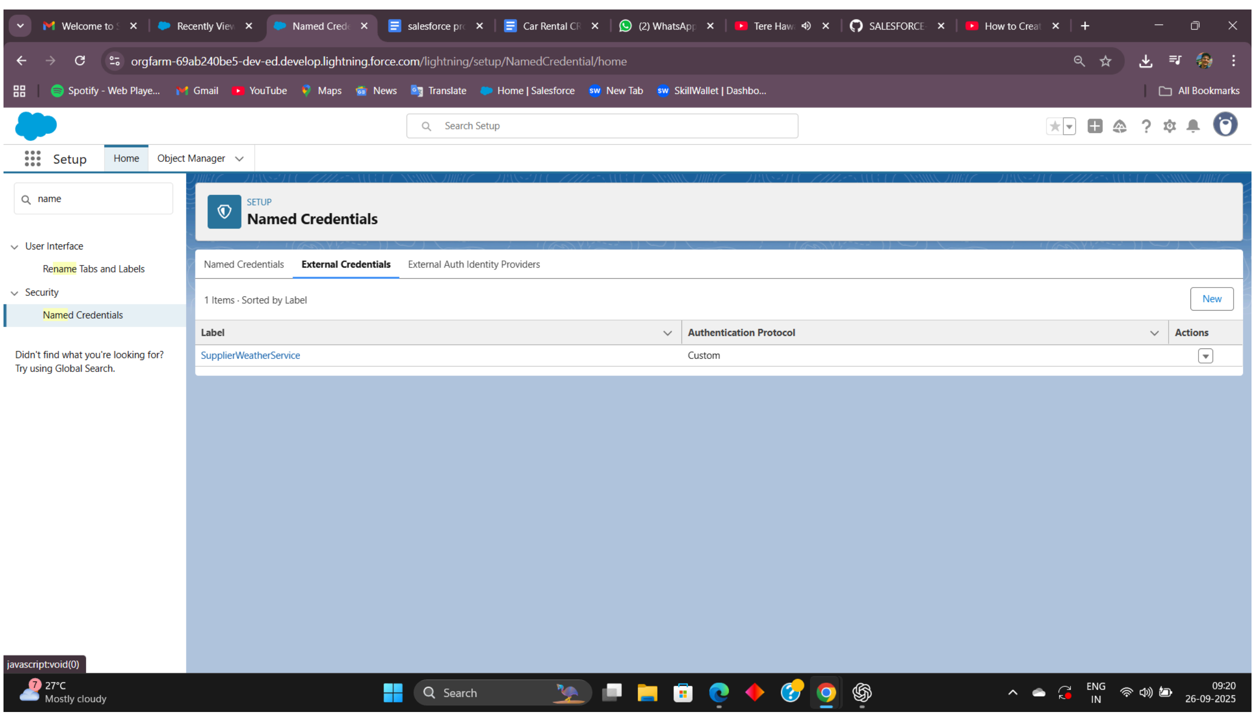
1 Named Credentials :

- Store authentication settings for external systems securely.



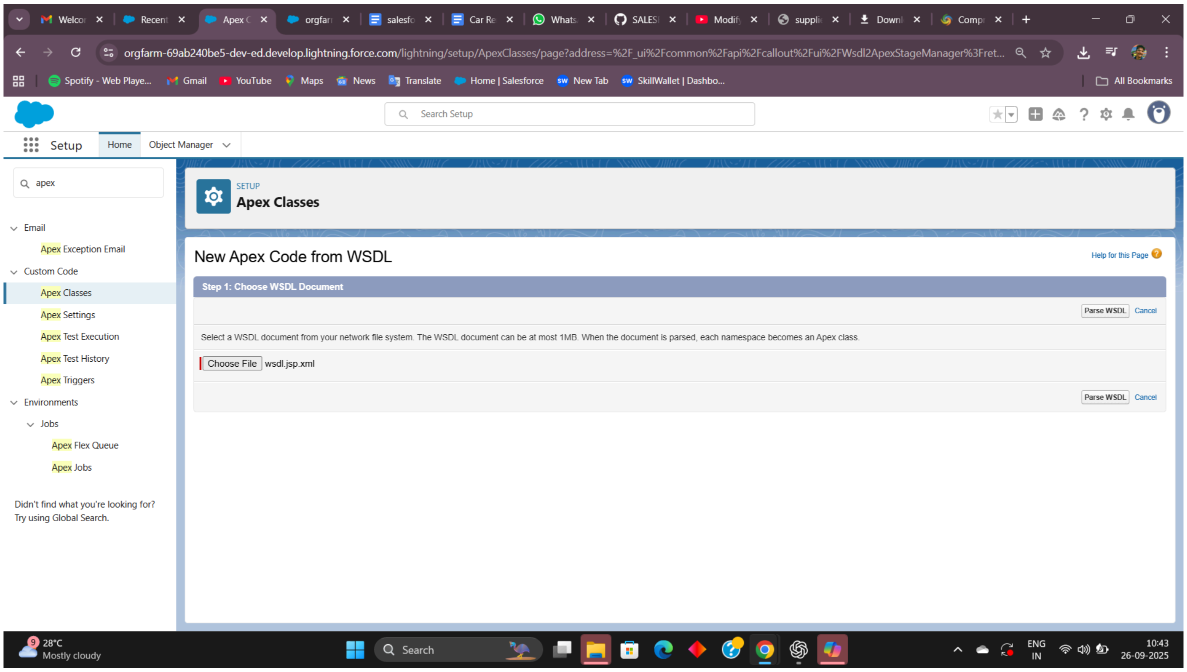
2. External Services :

- Register and invoke APIs from external systems directly in Salesforce.



3. Web Services (REST/SOAP)

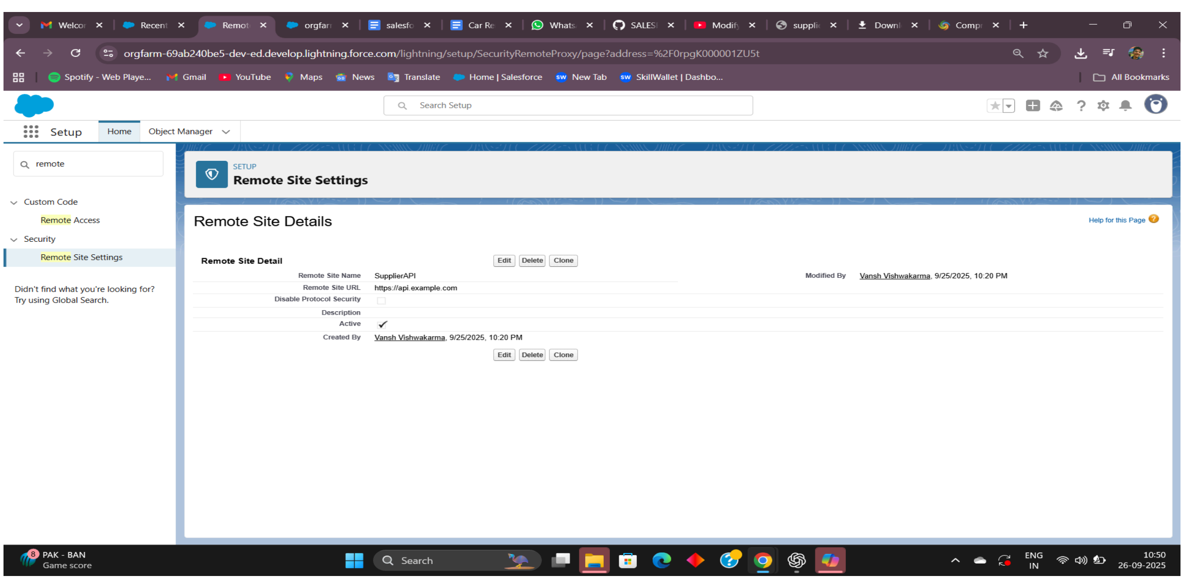
REST callout: Get insurance status.



4. <u>Callouts</u> :

Use HTTP Callouts to integrate Salesforce with external APIs.

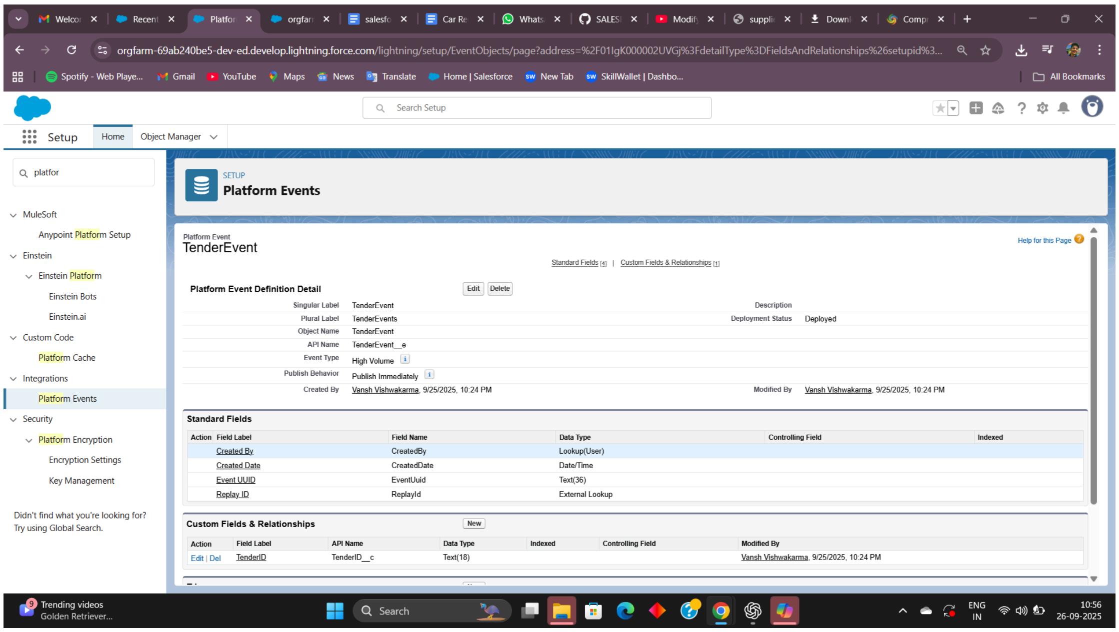
Example: Push contract approvals to an external project management tool.



5. Platform Events :

Use event-driven architecture to trigger actions in real-time.

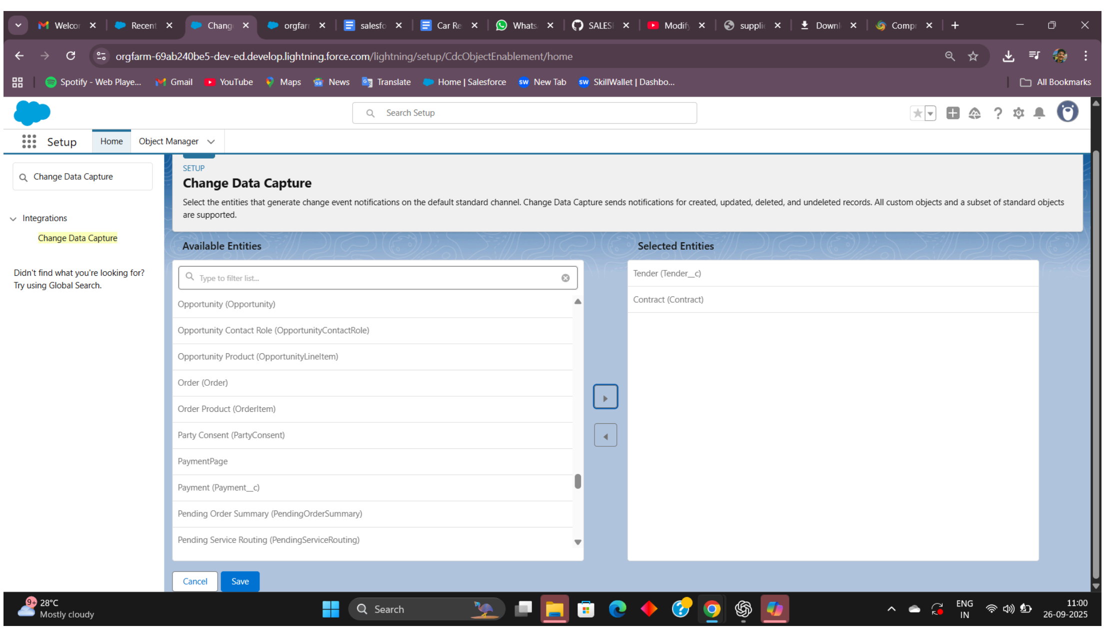
Example: Notify external systems when a tender is approved.



6. Change Data Capture :

Monitor Salesforce record changes in real-time.

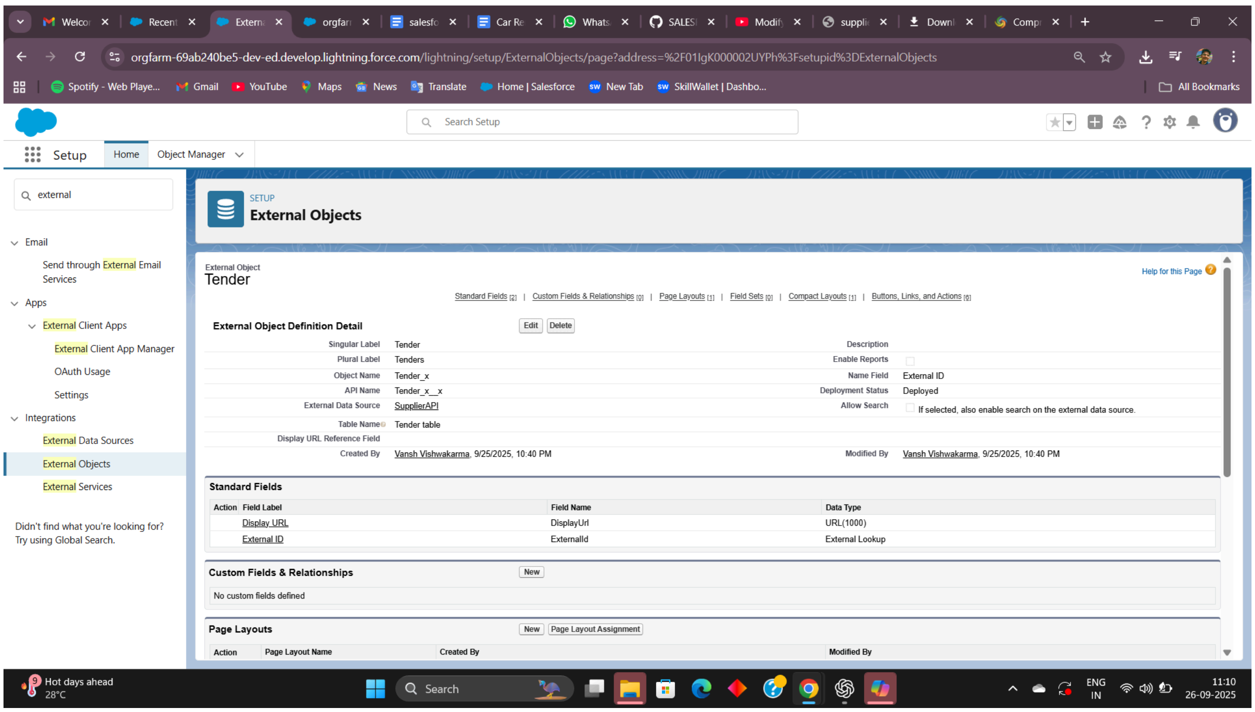
Example: Automatically sync updates on Contracts to ERP systems.



7. <u>Salesforce Connect</u> :

Access external objects and data without storing it in Salesforce.

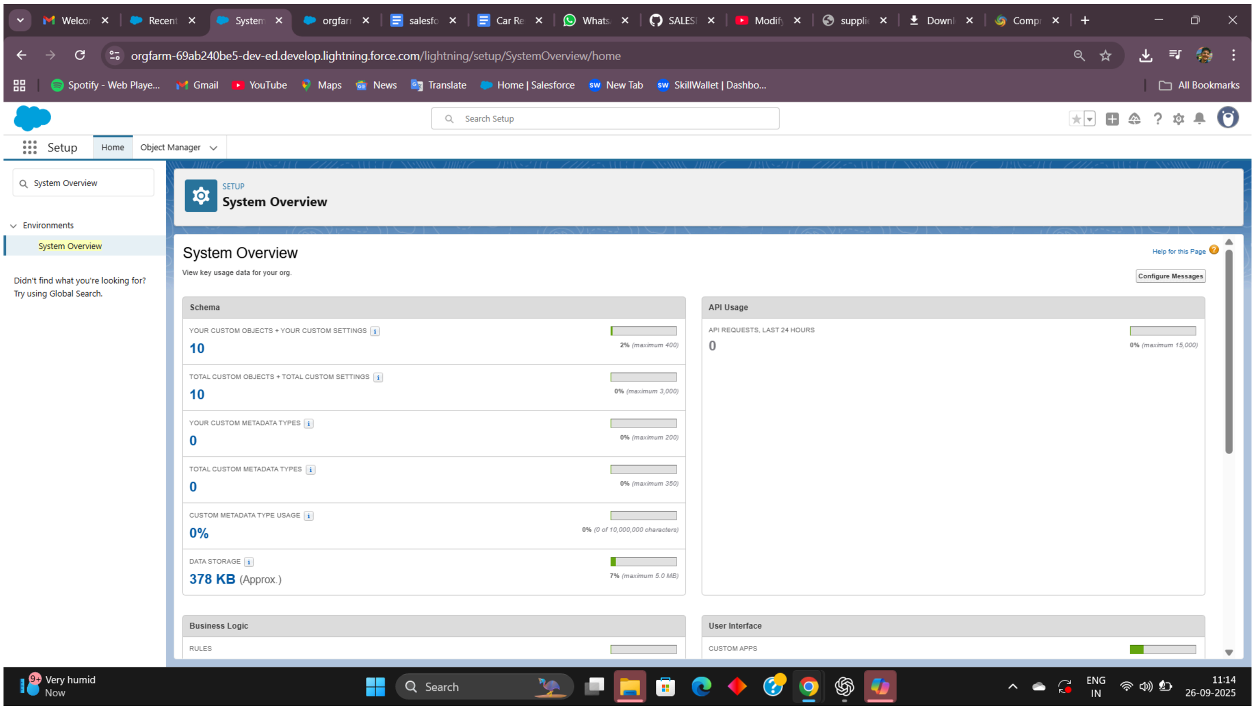
Example: View supplier bids from external database within Salesforce UI.



8. <u>API Limits</u> :

Monitor and manage API usage to avoid hitting limits.

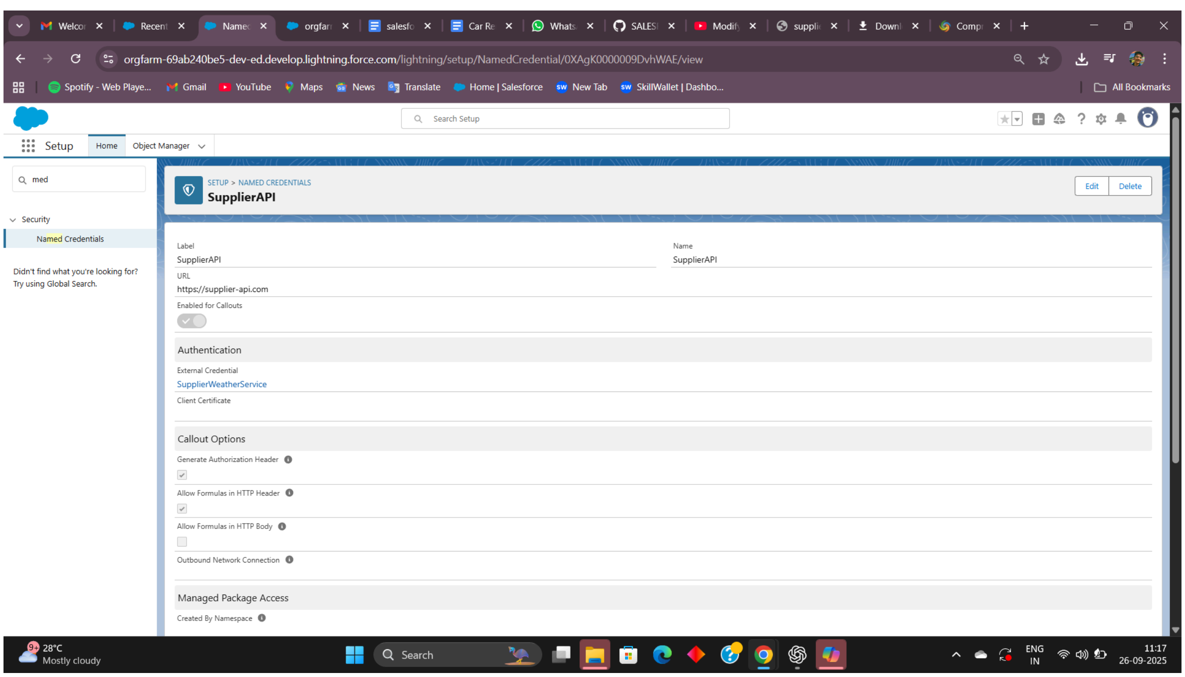
Example: Limit external integrations to prevent exceeding daily API calls.



9. <u>OAuth & Authentication</u> :

Securely authenticate Salesforce with external apps.

Example: OAuth 2.0 flow for integrating with partner systems.



10. Remote Site Settings :

Register external endpoints to allow Salesforce callouts.

Example: Add supplier API URL in Remote Site Settings to enable communication.

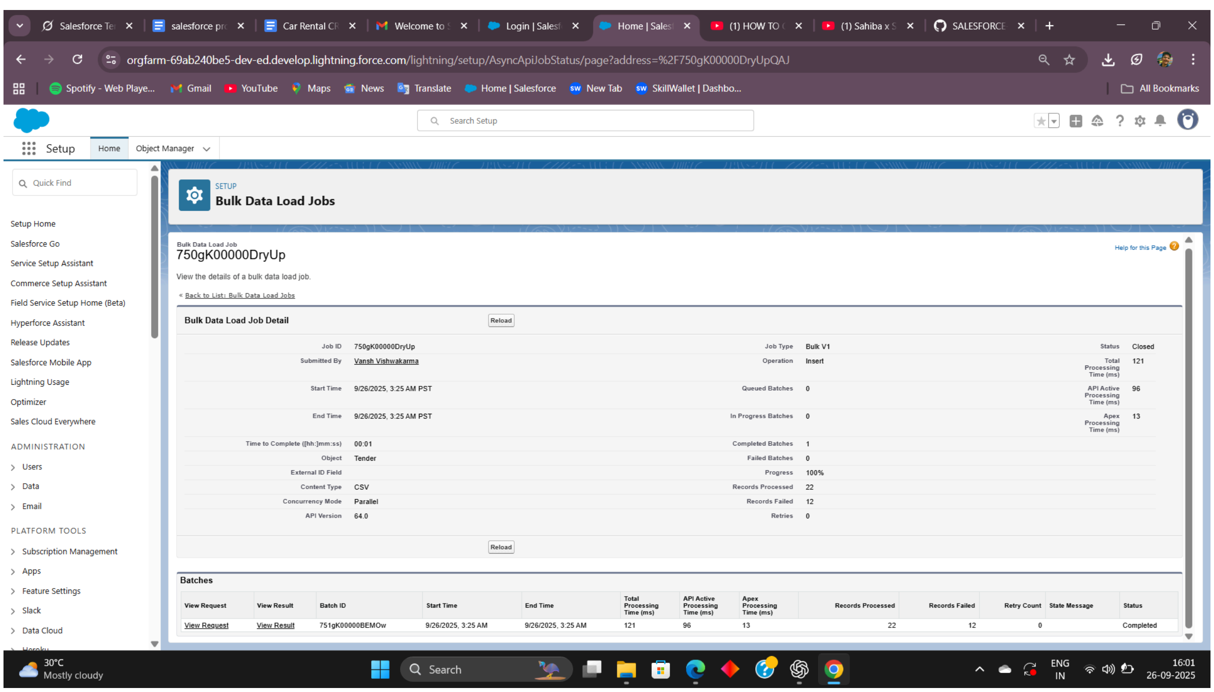
NOTE : we have already done in phase 4 .

Phase 8: Data Management & Deployment

1. Data Import Wizard :

Tool for importing small to medium datasets

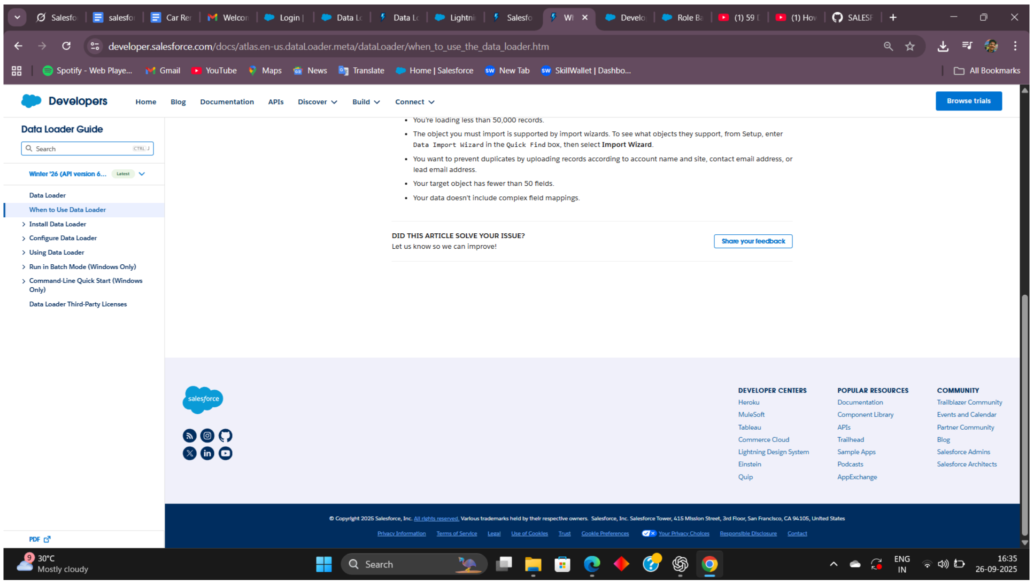
Enables adding records for Contractors, Tenders, Bids, Projects, and Payments.



2. Data Loader :

Supports bulk import, update, upsert, export, and deletion of large datasets.

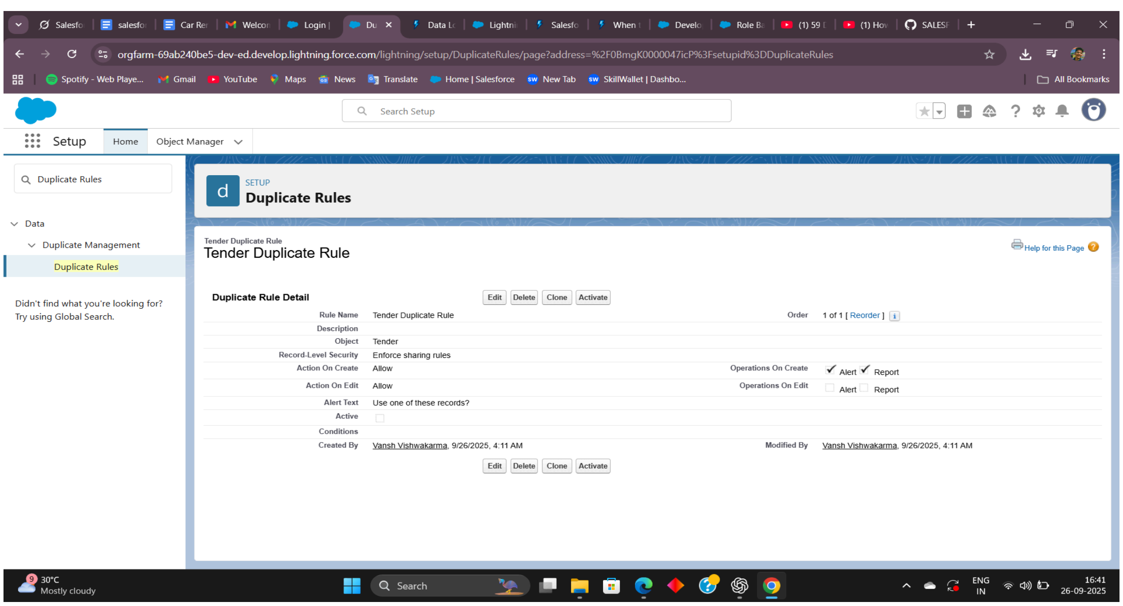
Ideal for large-scale data operations beyond the limits of the Data Import Wizard.



3. Duplicate Rules :

Prevents duplicate records and maintains data accuracy.

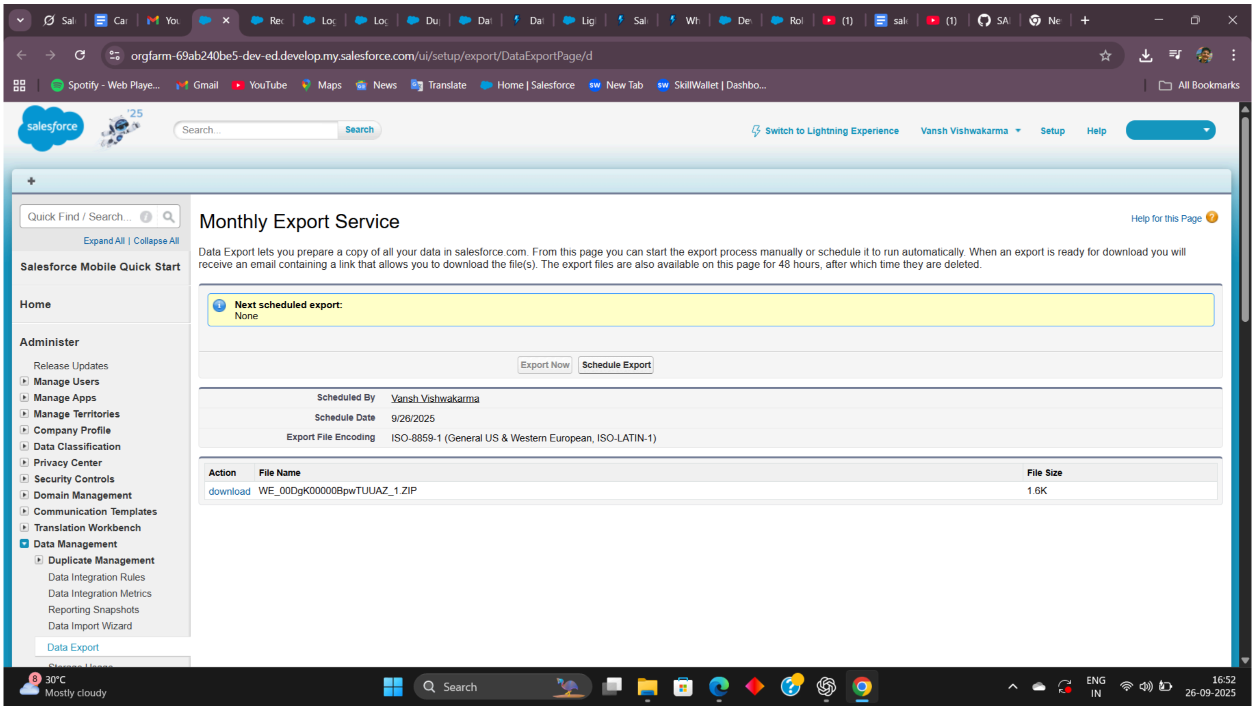
Ensures unique entries for Accounts, Contacts, Tenders, and Bids.



4. Data Export & Backup :

Provides regular backup of Salesforce data.

Helps recover data in case of accidental deletion or corruption.



5. **ANT Migration Tool** :

Enables programmatic metadata deployment using XML descriptors.

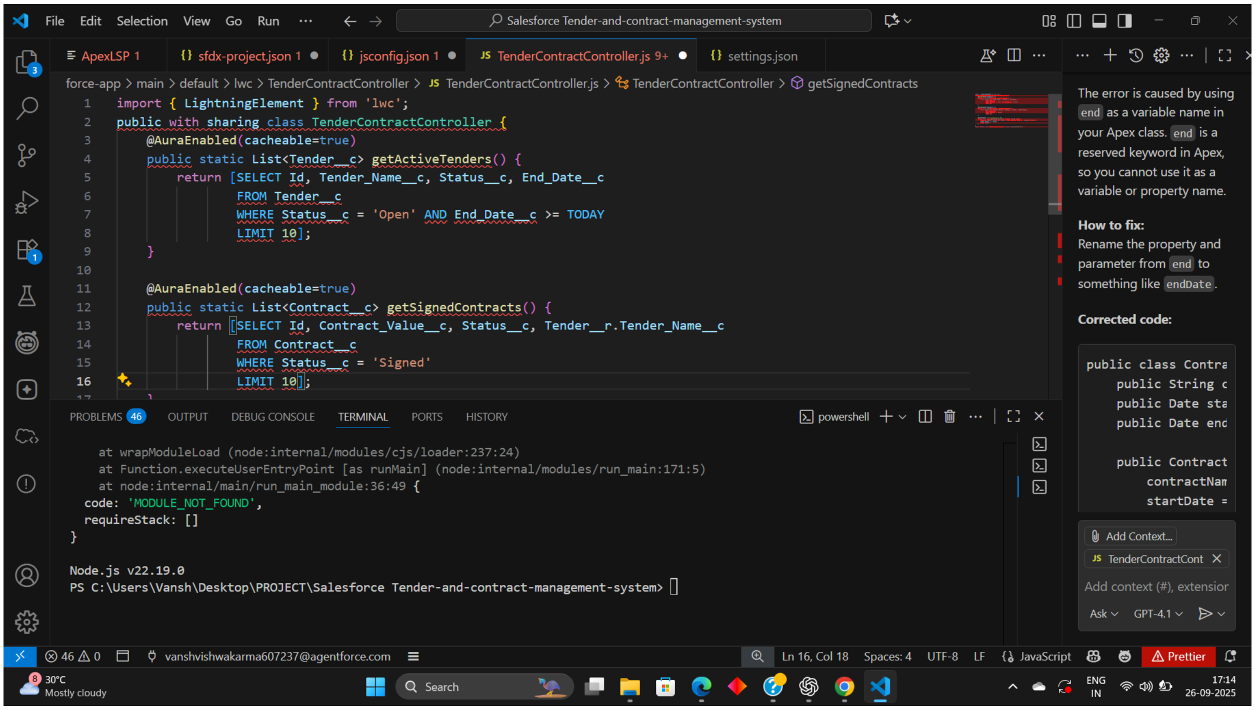
Supports version control and automated deployment pipelines.

Already done in step 4

6. VS Code & Salesforce CLI (SFDX) ;

Modern development environment for Salesforce.

Facilitates metadata management, scratch orgs, code deployment, and continuous integration.



Phase 9: Reporting, Dashboards & Security Review

👉 Goal: Monitor business & secure data.

1. Reports :

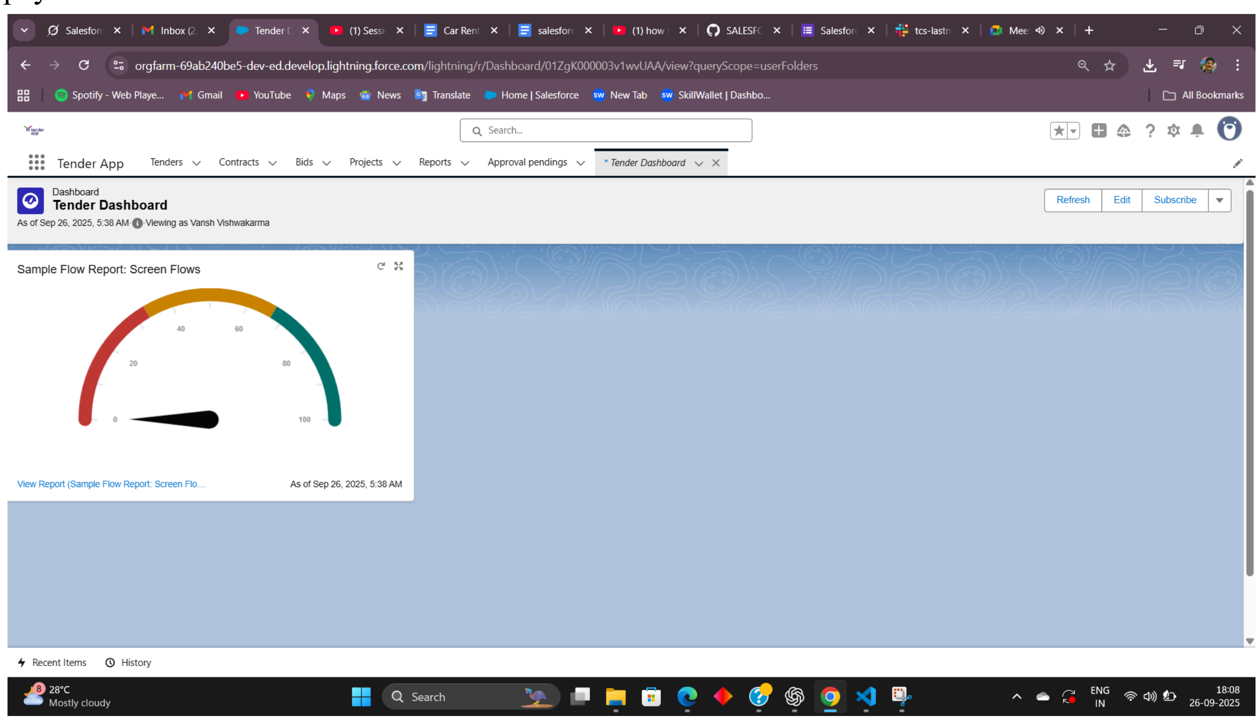
- Tabular, Summary, Matrix, Joined reports provide different ways to view and analyze Salesforce data.
- Reports can track Tenders, Bids, Contracts, Payments, and their status or value.

2. Report Types:

- Define which objects and related records can be included in reports.
- Custom report types (e.g., Tender with Bids) allow detailed reporting on multiple related objects.

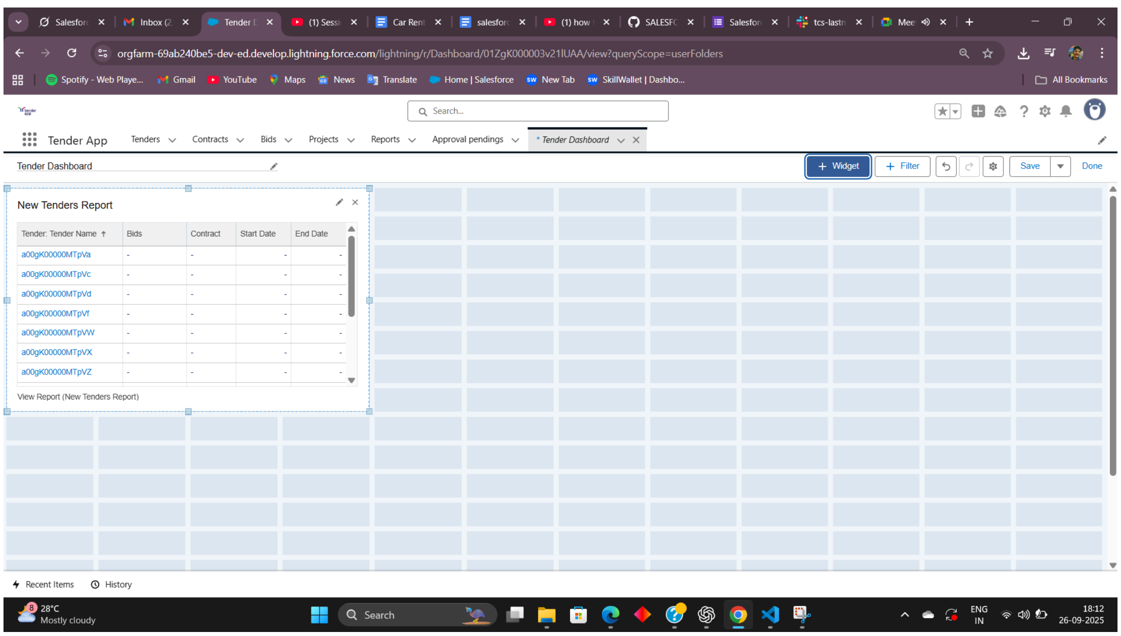
3. Dashboards:

- Visual representation of reports with charts, graphs, and tables.
- Provides at-a-glance monitoring of tender lifecycle, bid status, contract progress, and payments.



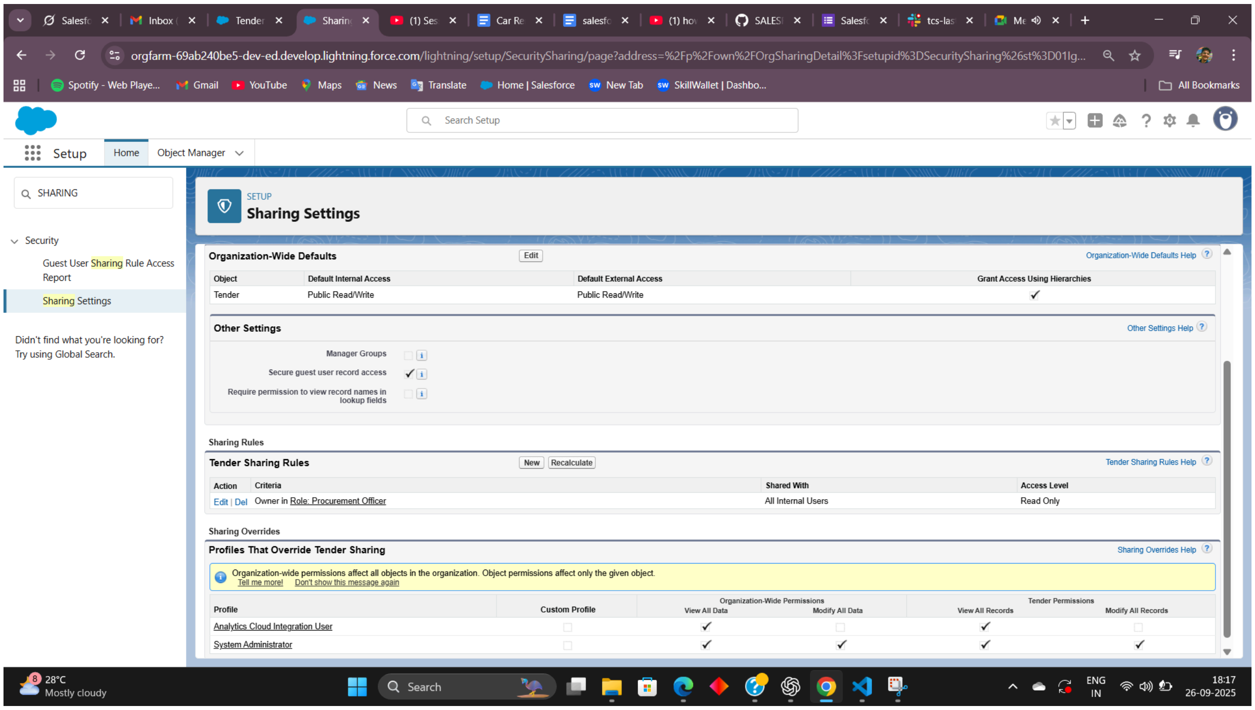
5. <u>Dynamic Dashboards</u> :

- Display data based on the viewing user's role or access level.
- Ensures managers, finance officers, and contractors see only relevant information.



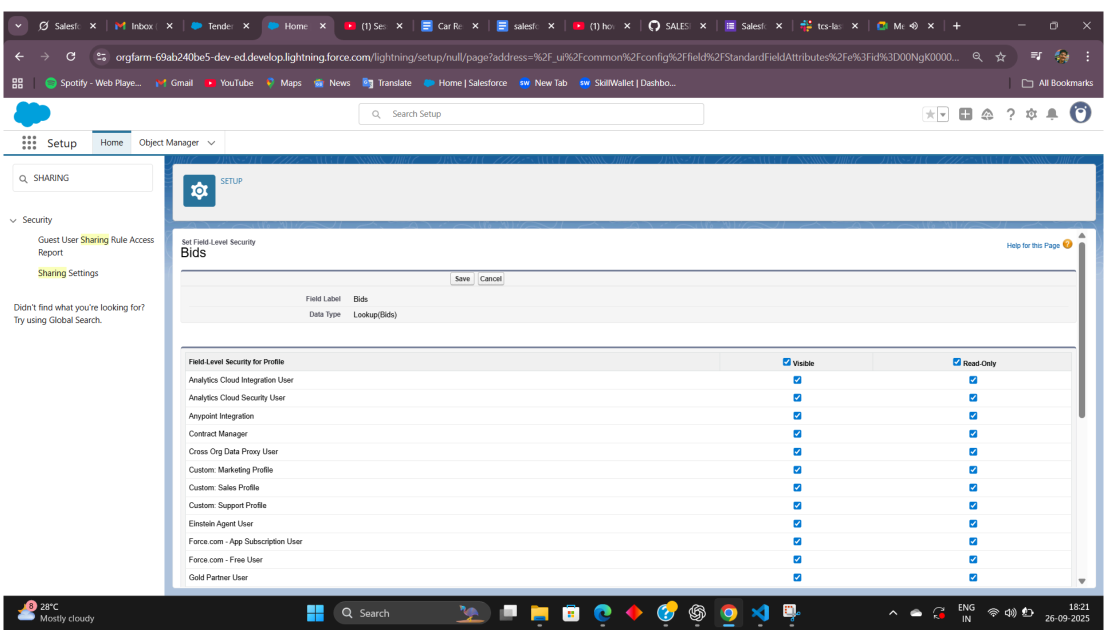
6. <u>Sharing Settings</u> :

- Control record-level access using **Org-Wide Defaults (OWD)**, role hierarchy, and sharing rules.
- Ensures sensitive data like contract values are visible only to authorized users.



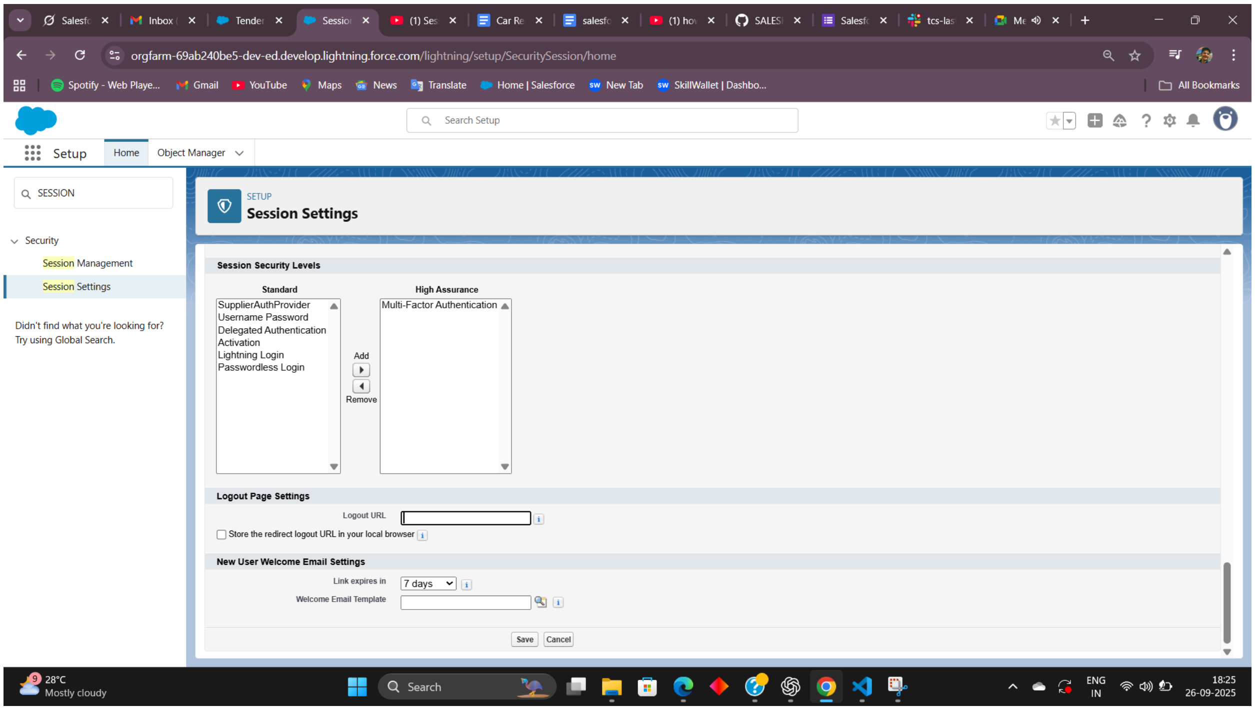
7. **Field-Level Security (FLS)** :

- Controls visibility and editability of individual fields for different profiles.
- Protects confidential data while providing necessary access to relevant users.



8. <u>Session Settings</u> :

- Manage session duration, security policies, and login behavior to maintain secure access.

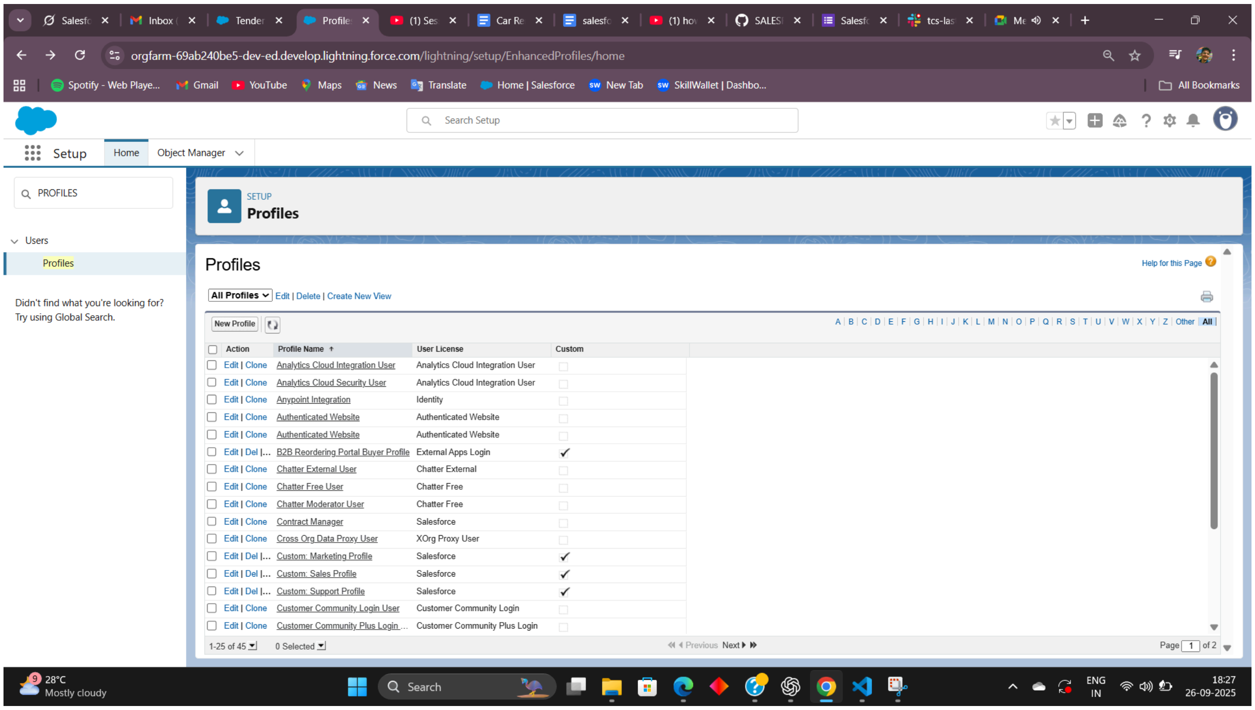


9. <u>Login IP Ranges</u> :

- Restrict access to Salesforce org based on trusted IP addresses.

- Enhances security by limiting logins to office or approved locations.

●



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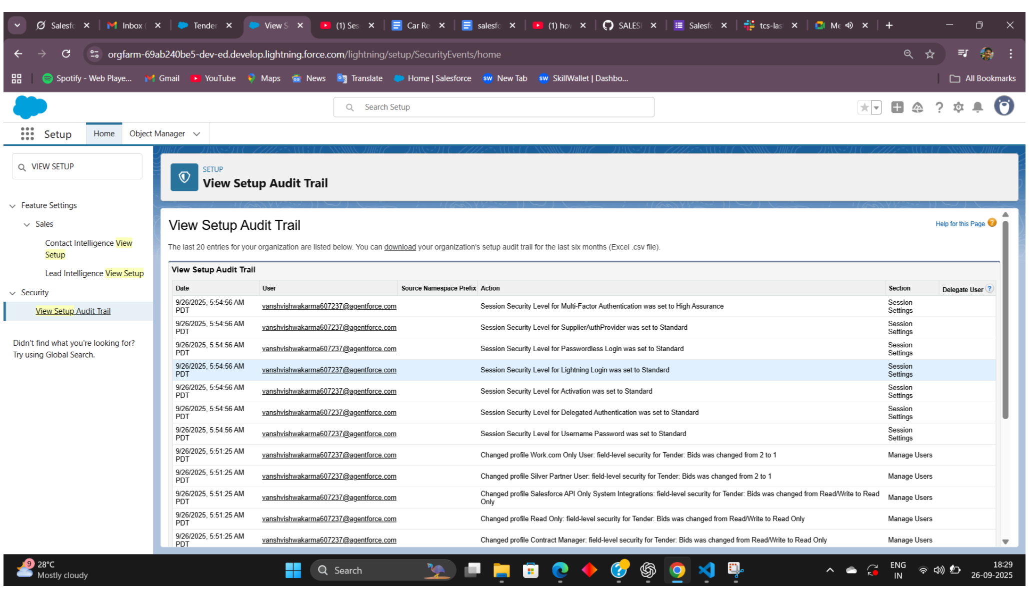
10 . Audit Trail :

● Tracks configuration and metadata changes in Salesforce setup.

● Provides accountability and supports compliance audits.



Phase 10: Final Presentation & Demo Day

👉 Goal: Wrap it up like a real project delivery.

1. <u>Pitch Presentation</u> :

Present the project idea, objectives, and outcomes to stakeholders.

2. Demo Walkthrough :

Showcase the working solution, highlighting key features and functionalities.

3. Feedback Collection :

Gather input and suggestions from audience or evaluators for improvement.

4 . Handoff Documentation:

Provide comprehensive project documents, including configurations, reports, and manuals.

5. LinkedIn/Portfolio Project Showcase :

Share the project publicly on professional platforms to demonstrate skills and experience.