

# Phase 7: Integration & External Access – Student Management System

## Goal of This Phase

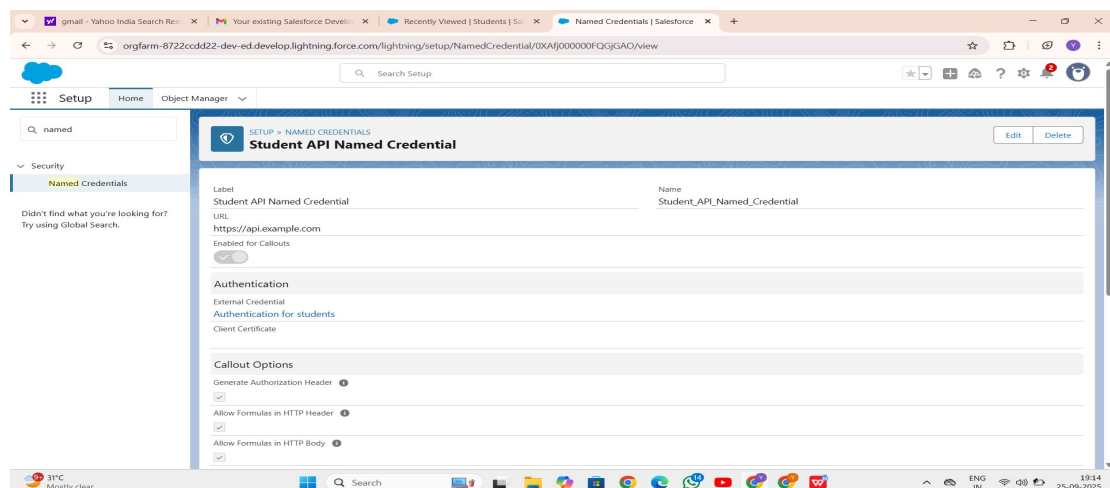
The primary goal of this phase was to enable **seamless data exchange and interaction** between Salesforce and external systems.

This ensures that the Student Management System can:

- Synchronize student data with other platforms (ERP, Learning Systems, etc.)
- Trigger real-time updates when changes happen inside Salesforce.
- Provide secure and reliable API endpoints for external applications.
- Enforce best practices for authentication, callouts, and integration limits.

## 1. Named Credentials

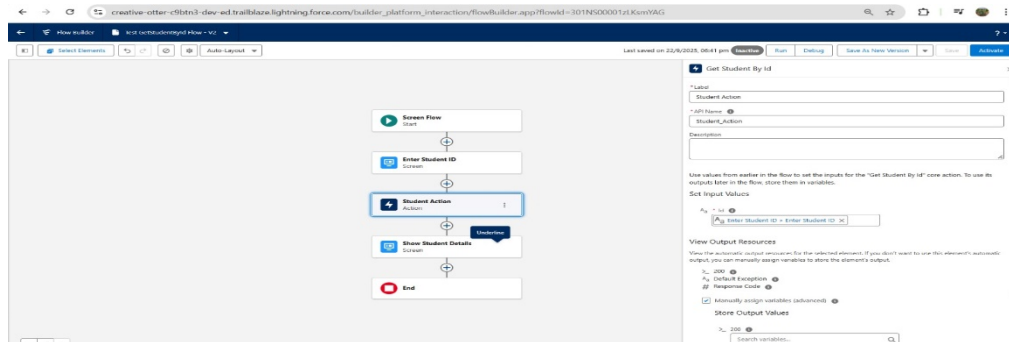
- **Created Named Credential:** Student\_API\_Named\_Credential
- Configured with:
  - Base URL of the external Student API.
  - Authentication type (if required – basic or OAuth).
- Purpose: Simplified authentication and callout management without exposing credentials in Apex code.



## 2. External Services

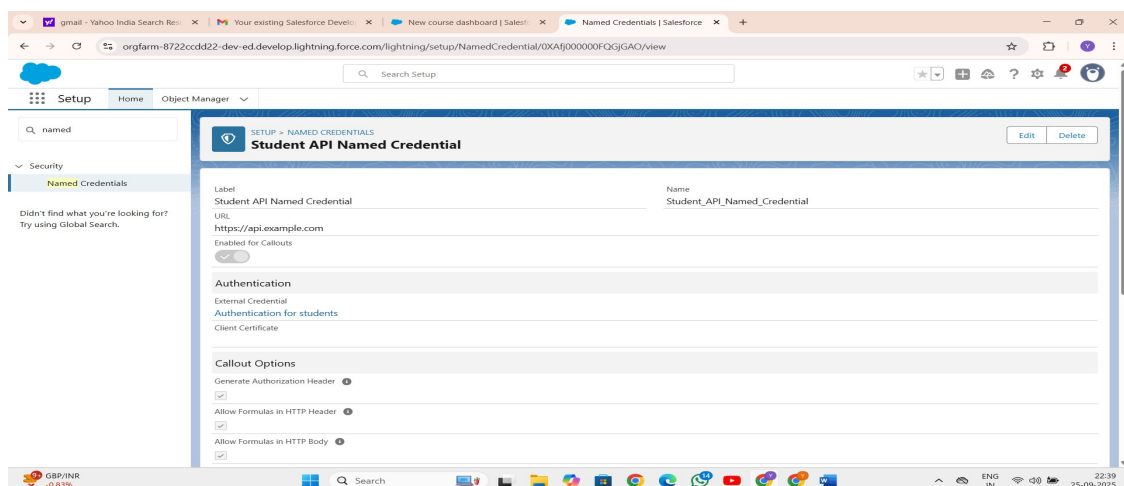
- **Registered External Schema:** Connected to the external Student REST API using the schema definition.
- Auto-generated Apex classes for:

- Fetching student details.
- Creating or updating student records externally.
- Purpose: Allow declarative integration (Flow & Apex) without manually writing callout code.



### 3. Web Services (REST/SOAP)

- **Developed REST Apex Class:** StudentRESTService
- Exposed endpoints:
  - /students → Create or update student records.
  - /students/{id} → Fetch student details by Student\_ID\_\_c.
- Added proper authentication and exception handling.
- Purpose: Allow external systems to push and pull student data securely.



## 4. Callouts

- **Create Apex Callout Class:** CalloutExample
- Added test class with HttpCalloutMock to enable test coverage.
- Verified callout works with Remote Site Settings and Named Credentials.
- Purpose: Send student updates from Salesforce to external systems when a record is created or updated.

## 5. Platform Events

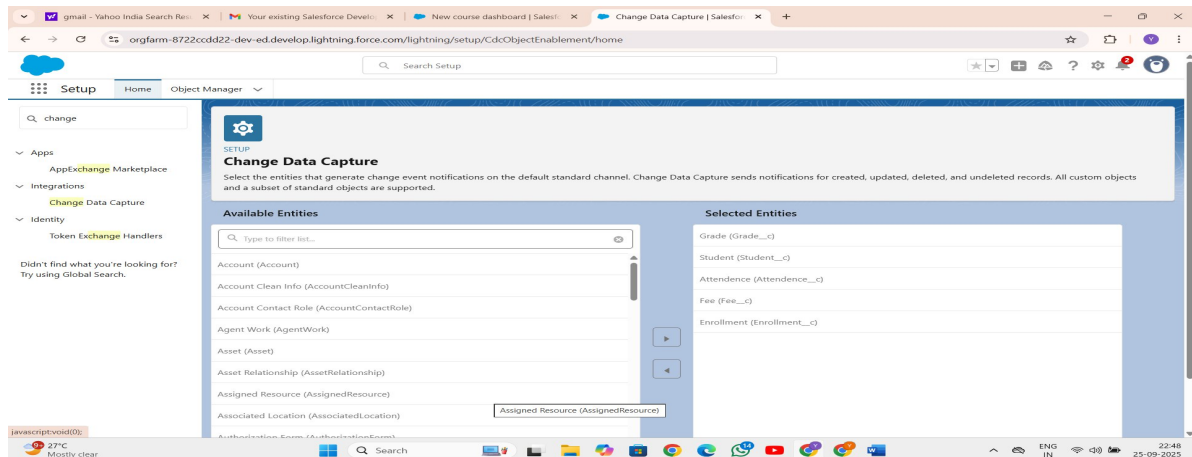
- **Created Platform Event:** Student\_Event\_\_e
- Custom Fields:
  - Student\_ID\_\_c (Text)
  - First\_Name\_\_c (Text)
  - Last\_Name\_\_c (Text)
  - Course\_Program\_\_c (Text)
  - Grade\_Marks\_\_c (Text)
  - Semester\_\_c (Number)
  - Status\_\_c (Checkbox)
  - Timestamp\_\_c (Date/Time)
- Purpose: Publish student data changes to subscribers (internal or external) in real time.

The screenshot shows the Salesforce Setup page for Platform Events. The left sidebar contains navigation links for Setup, Home, and Object Manager. The main content area is titled 'Platform Events' and shows the 'Platform event' definition for 'Student\_Event\_\_e'. The 'Platform Event Definition Detail' section includes fields for Singular Label, Plural Label, Object Name, API Name, Event Type, Publish Behavior, and Created By. The 'Standard Fields' section lists fields like CreatedBy, CreatedDate, EventJuid, and ReplayId. The 'Custom Fields & Relationships' section is currently empty.

Action	Field Label	Field Name	Data Type	Controlling Field	Indexed
	CreatedBy	CreatedBy	Lookup(User)		
	CreatedDate	CreatedDate	Date/Time		
	EventJuid	EventJuid	Text(36)		
	ReplayId	ReplayId	External Lookup		

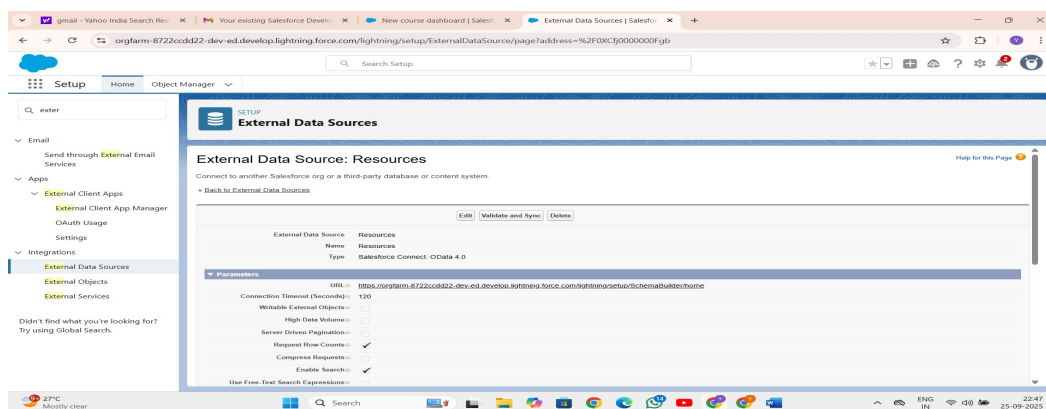
## 6. Change Data Capture (CDC)

- **Enabled CDC for Student\_\_c object**
- **Created Apex Trigger: StudentChangeTrigger**
  - Logs change type, changed fields, and commit timestamp.
  - Takes action when Grade\_Marks\_\_c is updated.
- **Purpose: Monitor and respond to changes in real time without writing complex logic.**



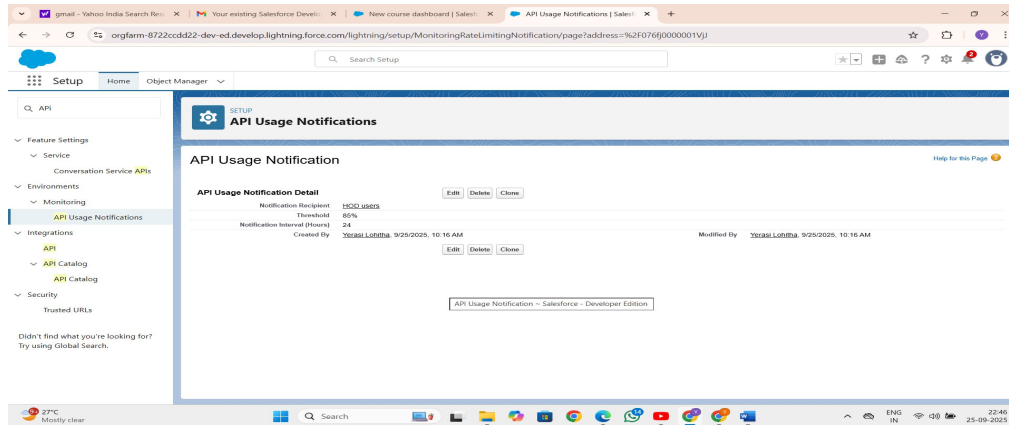
## 7. Salesforce Connect

- Configured **External Object** (Student\_External\_\_x) to display external student data within Salesforce.
- Verified CRUD operations (read-only or writable depending on requirement).
- **Purpose: Provide a unified view of external student records directly in Salesforce UI.**



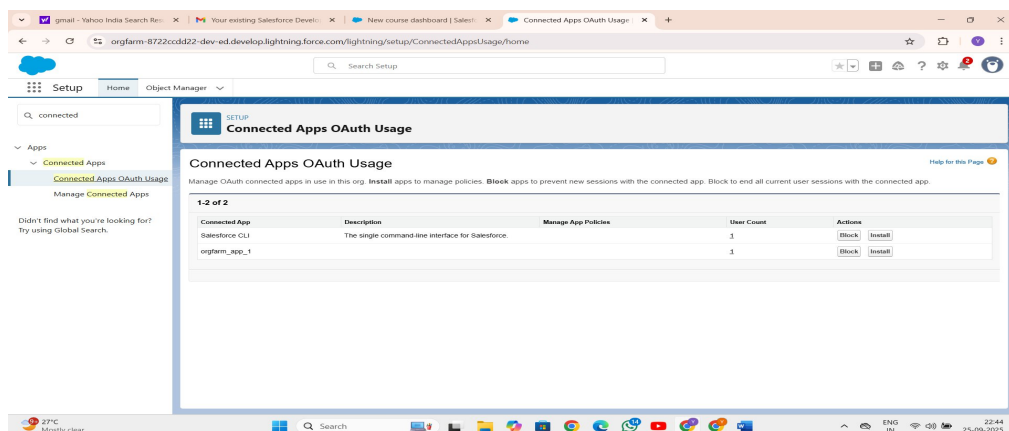
## 8. API Limits

- Enabled **API Usage Notifications** to alert when API usage reaches 75% and 90%.
- Monitored API calls through **System Overview** and **Reports**.
- Purpose: Prevent API over-consumption and avoid service interruptions.



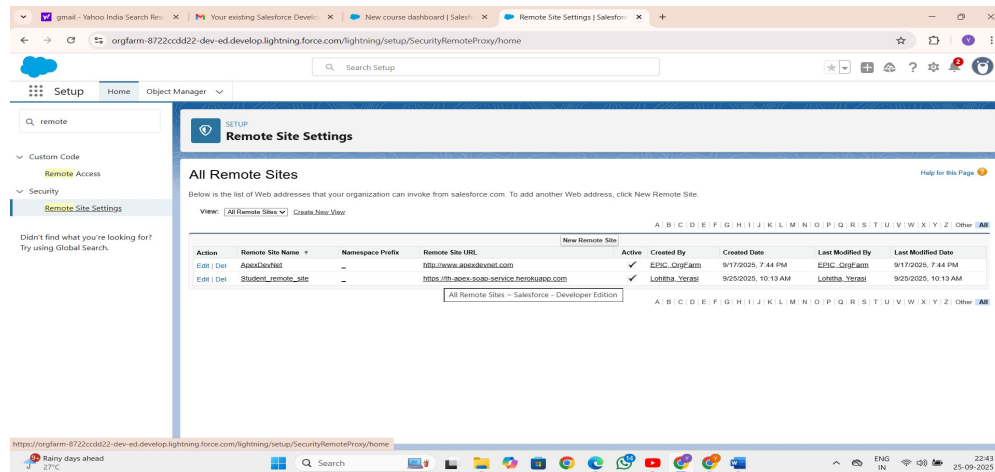
## 9. OAuth & Authentication

- Created **Connected App: StudentManagementIntegration**
- Configured OAuth scopes:
  - Full Access (full)
  - Perform requests on your behalf at any time (refresh\_token, offline\_access)
- Assigned profiles/permission sets.
- Tested authentication using Postman and verified in **Connected Apps OAuth Usage**.
- Purpose: Securely allow external applications to authenticate and integrate.



## 10. Remote Site Settings

- **Created Remote Site:** Student\_API\_Remote\_Site
- Added base URL of external API to allow callouts.
- **Purpose:** Ensure Salesforce can make HTTPS callouts to the external Student API.



The screenshot shows the Salesforce Setup interface for Remote Site Settings. The left sidebar contains the Setup menu with options like Custom Code, Remote Access, and Security. The main content area is titled 'Remote Site Settings' and displays a table of 'All Remote Sites'. The table has columns for Action, Remote Site Name, Namespace Prefix, Remote Site URL, Active status, Created By, Created Date, Last Modified By, and Last Modified Date. Two sites are listed: 'Student\_API\_Remote\_Site' and 'Student\_API\_Remote\_Site'. The 'Student\_API\_Remote\_Site' is active and was created by 'Lohitha\_Venkat' on 9/25/2025 at 10:13 AM. The 'Student\_API\_Remote\_Site' is also active and was created by 'Lohitha\_Venkat' on 9/25/2025 at 10:13 AM. The table is filtered by 'All Remote Sites' and 'Create New Site'.

Action	Remote Site Name	Namespace Prefix	Remote Site URL	Active	Created By	Created Date	Last Modified By	Last Modified Date
<a href="#">Edit</a>   <a href="#">Del</a>	Student_API_Remote_Site	-	https://api.apex.sage-service.hemkargo.com	✓	Lohitha_Venkat	9/25/2025, 10:13 AM	Lohitha_Venkat	9/25/2025, 10:13 AM
<a href="#">Edit</a>   <a href="#">Del</a>	Student_API_Remote_Site	-	https://api.apex.sage-service.hemkargo.com	✓	Lohitha_Venkat	9/25/2025, 10:13 AM	Lohitha_Venkat	9/25/2025, 10:13 AM