

# Student Attendance & Performance Tracker

## Phase 8: Data Management & Deployment

### Overview

Phase 8 focuses on managing project data efficiently and ensuring data accuracy, backup, and readiness for deployment. In the **Student Attendance & Performance Tracking System**, Salesforce's built-in data management tools were used to import records, prevent duplicates, and optionally back up data. Since the project is implemented within a **single Salesforce org**, advanced deployment tools were not required.

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### 8.1 Data Import Wizard

#### Description

The Data Import Wizard is a web-based Salesforce tool that allows administrators to import data into standard and custom objects using CSV files. It supports field mapping, data validation, and error handling.

#### Use Case in Project

In this project, the Data Import Wizard was used to **bulk upload Students, Courses, and Enrollment records**, eliminating the need for manual data entry. This ensured faster setup and consistency of initial data.

#### Implementation Details

- Student data such as name, email, and phone were imported in bulk.
- Course details were uploaded using a CSV file.
- Enrollment records were imported to establish relationships between Students and Courses.

The screenshot shows the Salesforce Setup interface with the 'Edit Field Mapping' step highlighted. A progress bar at the top indicates the process is 'Almost done'. Below the bar, three steps are shown: 'Choose data', 'Edit mapping' (which is currently selected), and 'Start import'. The main content area displays a table titled 'Edit Field Mapping: Students' showing the mapping between CSV headers and Salesforce fields. The table includes columns for 'Edit', 'Mapped Salesforce Object', 'CSV Header', and three examples.

Edit	Mapped Salesforce Object	CSV Header	Example	Example	Example
Change	Student Name	Name	Rahul Sharma	Anita Rao,	Suresh Kumar
Change	Email	Email__c	rahul@gmail.com	anita@gmail.com	suresh@gmail.com
Change	Phone	Phone__c	9012345678	9123456780	9876543210

The screenshot shows the Salesforce Setup interface with the 'Start import' step highlighted. A progress bar at the top indicates the process is 'Great job'. Below the bar, three steps are shown: 'Choose data', 'Edit mapping', and 'Start import' (which is currently selected). The main content area displays a 'Review & Start Import' page. It shows 'Your selections:' including 'Students' and 'Add new records'. A modal dialog box is displayed, stating 'Congratulations, your import has started! Click OK to view your import status on the Bulk Data Load Job page.' An 'OK' button is visible in the dialog. The background of the page shows options for 'What to include:'.

## 8.2 Data Loader

### Description

Data Loader is a desktop-based Salesforce tool used for large-volume data import, update, delete, or export operations.

## Relevance to Project

### ⚠ Optional

Since this project uses a **small dataset for demonstration purposes**, Data Loader was not required. However, it can be used in real-world scenarios involving thousands of student records.

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## 8.3 Duplicate Rules

### Description

Duplicate Rules prevent the creation of duplicate records by defining matching criteria and actions.

### Use Case in Project

Duplicate Rules were implemented to ensure that **no duplicate Student records** are created based on email address. This maintains data integrity and avoids confusion in attendance and performance tracking.

### Implementation Details

- Object: Student
- Matching Criteria: Email (Exact Match)
- Action: Block record creation when a duplicate is detected

The screenshot shows the 'Duplicate Rule Detail' page for a 'Student Duplicate Email Rule'. The rule is named 'Student Duplicate Email Rule' and is set to 'Active'. It uses the 'Student' object and applies 'Enforce sharing rules' at the record level. On creation, it allows the action and triggers an alert and report. On edit, it also allows the action and triggers an alert and report. The alert text is 'A Student with this Email already exists'. The matching rule is 'Student Email Exact Match' (Mapped). The rule was created by Sri varshini Pentakota on 18/12/2025, 1:51 pm. The matching criteria are 'Student: Email EXACT MatchBank = FALSE'. The page includes standard navigation buttons like Edit, Delete, Clone, and Deactivate.

## 8.4 Data Export & Backup

### Description

Salesforce Data Export allows administrators to export data for backup or offline use.

## Use Case in Project

### ⚠ Optional but Recommended

Data Export was used as a **best practice** to maintain a backup of project data such as Students, Courses, and Attendance records.

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## 8.5 Change Sets

### Description

Change Sets are used to deploy metadata (objects, fields, automation) between Salesforce orgs.

### Relevance to Project

#### ✗ Not required

The project is developed and tested within a **single Salesforce org**, so deployment between orgs was not necessary.

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## 8.6 Unmanaged vs Managed Packages

### Description

Salesforce packages are used to distribute components between orgs.

### Relevance to Project

#### ✗ Not required

The application is a **standalone academic project** and does not require distribution or upgrades.

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## 8.7 ANT Migration Tool

### Description

The ANT Migration Tool is a command-line utility for deploying metadata between Salesforce orgs.

### Relevance to Project

#### ✗ Not required

Advanced deployment scenarios were outside the scope of this project.

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## **8.8 VS Code & SFDX**

### **Description**

VS Code and Salesforce DX are used for source-driven development and advanced deployments.

### **Relevance to Project**



#### **Optional**

Not required, as the project primarily uses declarative tools with minimal Apex.