**Phase 8 — Data Management & Deployment**

**🎯 Goal**

Ensure smooth data handling (import/export), prevent duplicates, and safely deploy changes from development to production.

**1. Data Import Wizard**

**Use:** For small to medium data volumes (up to 50,000 records) and supported objects like Leads, Contacts, Accounts, and custom objects.

**Steps:**

1. Setup → Quick Find → **Data Import Wizard** → Launch.
2. Choose Object (e.g., Lead, Contact, or Course\_\_c).
3. Upload CSV file.
4. Map CSV columns → Salesforce fields (e.g., *FirstName, LastName, Email, Preferred\_Course\_\_c*).
5. Choose import option (Insert, Update, or Upsert).
6. Start Import.

**Result:** Records are imported with a detailed **success/failure CSV** report. Errors show issues like missing fields, invalid picklist values, or duplicates.

**2. Data Loader**

**Use:** For large datasets (hundreds of thousands/millions) or when populating lookup fields (e.g., Course\_\_c, Batch\_\_c, Enrollment\_\_c).

**Steps:**

1. Download & install **Data Loader** (from Setup).
2. Login with Salesforce credentials.
3. Choose Insert / Update / Upsert / Delete.
4. Select Object (e.g., Lead, Enrollment\_\_c).
5. Upload CSV → Map CSV columns to **API field names**.
6. Run job.

**Result:** Large datasets are processed efficiently, supporting lookups via **Record IDs or External IDs**.

**3. Duplicate Rules**

**Use:** Prevent duplicate records for Leads, Contacts, Tutors, or Students.

**Steps:**

1. Setup → **Duplicate Management** → Matching Rules → New.
2. Example: Lead Matching Rule = match on **Email**.
3. Create Duplicate Rule → Object = Lead → Action = **Block** or **Allow with Alert**.
4. Repeat for Contacts/Students.

**Result:** The system blocks or warns users when a duplicate record is created.

**4. Data Export & Backup**

**Use:** Create backups before major imports or deployments.

**Steps:**

1. Setup → **Data Export** → Export Now.
2. Select objects (Lead, Contact, Course\_\_c, Batch\_\_c, Enrollment\_\_c).
3. Salesforce generates a ZIP file with CSVs for download.

**Alternative:** Data Loader → Export → Save as CSV.

**Result:** A local backup is available for recovery and auditing.

**5. Deployment Options**

**A. Change Sets (Admin-Friendly)**

* Setup → **Outbound Change Sets** → New.
* Add components (custom objects, flows, Apex classes, Lightning Web Components).
* Upload to target org (sandbox → production).
* Monitor in **Deployment Status**.

✅ **Best for admins** with point-and-click deployments.

**B. VS Code + Salesforce DX (Developer Approach)**

* sf project retrieve → pull metadata.
* sf project deploy start → deploy metadata.
* Works seamlessly with **Git version control**.

✅ **Best for developers** needing modern, scriptable, CI/CD-friendly workflows.

**C. ANT Migration Tool (Legacy)**

* Java-based command-line tool using build.xml and package.xml.
* Suitable for scripted CI/CD pipelines.
* ⚡ Modern projects prefer **SFDX**.

**6. Unmanaged vs Managed Packages**

| **Type** | **Description** | **Use Case** |
| --- | --- | --- |
| **Unmanaged** | Components editable after install | Internal use, Tutor Match CRM, prototypes |
| **Managed** | Locked, versioned, AppExchange-ready | Commercial apps with protected IP |

**Our Project:** Best delivered as an **Unmanaged Package** to allow schools/customers to customize.

**7. API Limits & Best Practices**

* Use **Data Loader** for >50k records (bulk API).
* Always **backup data** before imports.
* Run test imports and deployments in **Sandbox** first.
* Check **Deployment Status** to verify success.
* Bulkify imports/updates to avoid hitting governor limits.

**✅ Outcome of Phase 8**

* Data (Leads, Courses, Batches, Enrollments) imported and updated.
* Duplicate prevention rules active.
* Backup strategy established.
* Deployment pipeline implemented with **VS Code + SFDX**.
* CRM system ready for safe, production-level use.