

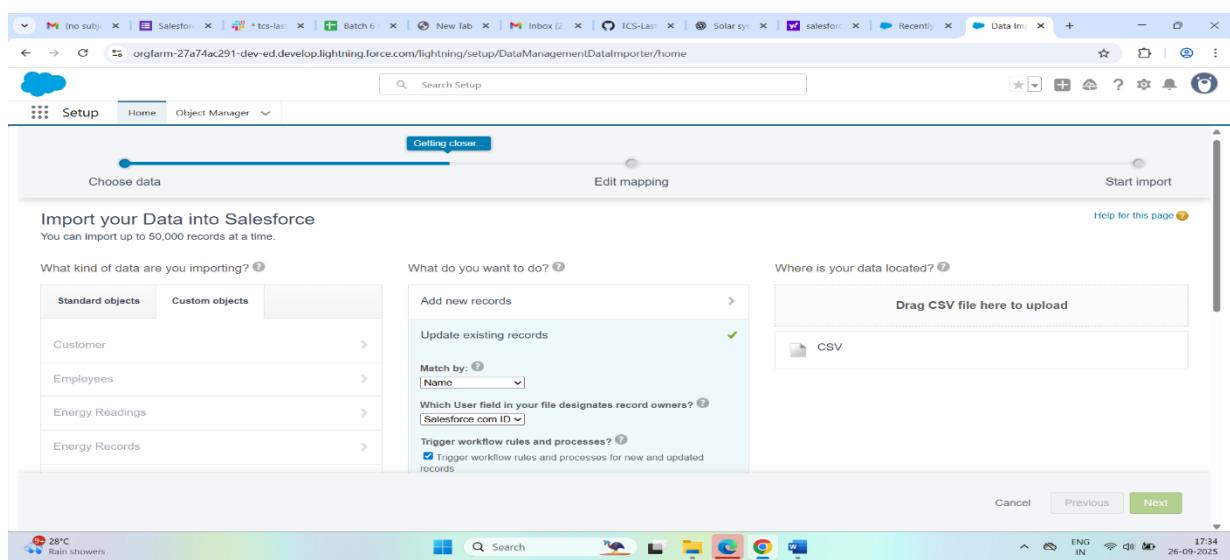
## Phase 8: Data Management & Deployment – Solar Energy Management System

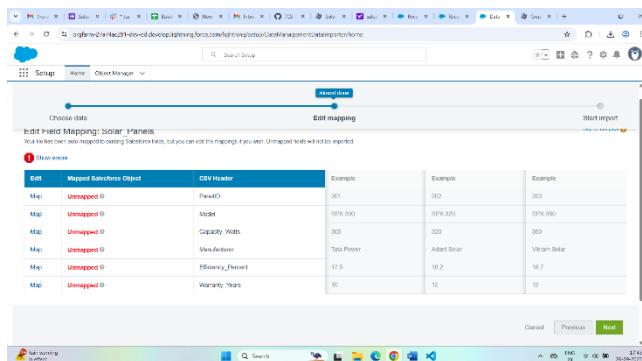
### Goal:

To ensure **data accuracy, security, and smooth deployment** of the Solar Energy Management System from the development environment (Sandbox) to Production.

### 1. Data Import Wizard

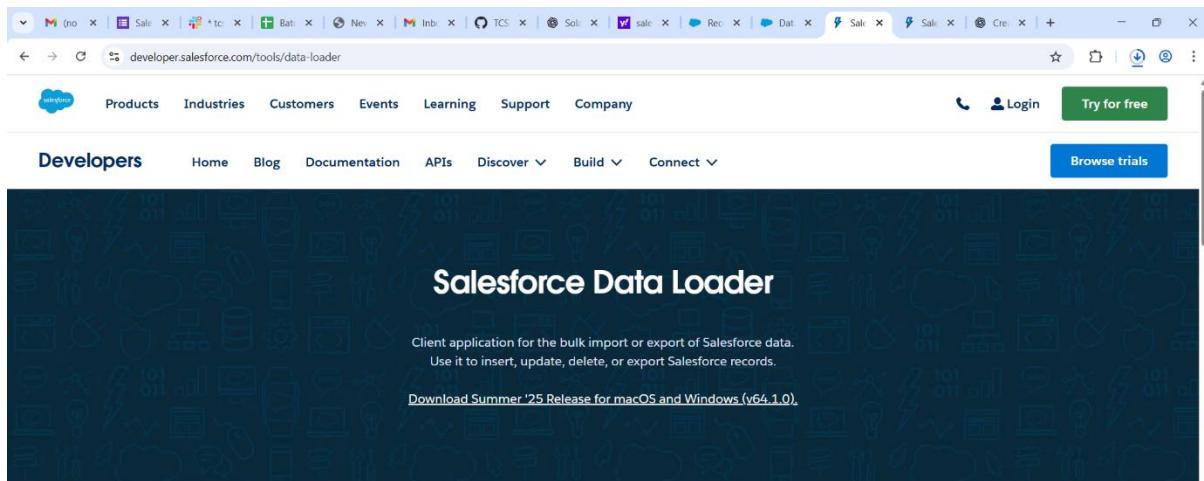
- Use when you need to **import small sets of data** (up to 50,000 records).
- Example in this project:
  - Import **Customers** (name, contact info).
  - Import **Solar Panels** (model, capacity, serial number).
  - Import **Installations** (location, date, customer).
- **Steps:**
  - Setup → Data Import Wizard → Select Object (Customer, Solar Panel, etc.) → Upload CSV → Map fields → Start Import.





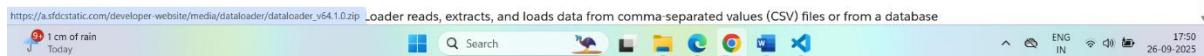
## 2. Data Loader

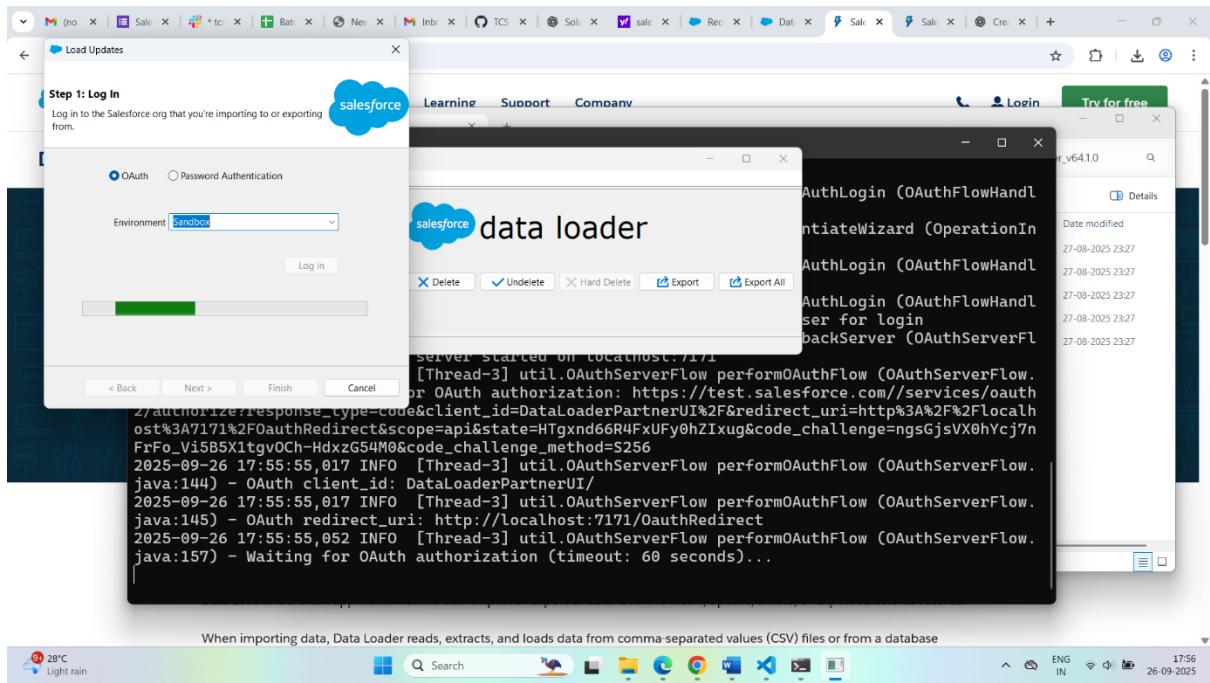
- Use when you need to **upload or update large amounts of data** (over 50,000 records).
- Example in this project:
  - Import **monthly energy usage readings**.
  - Bulk upload **billing records or maintenance schedules**.
- **Steps:**
  - Install Data Loader → Login → Choose Operation (Insert, Update, Upsert) → Select CSV file → Map fields → Upload.



### What is it?

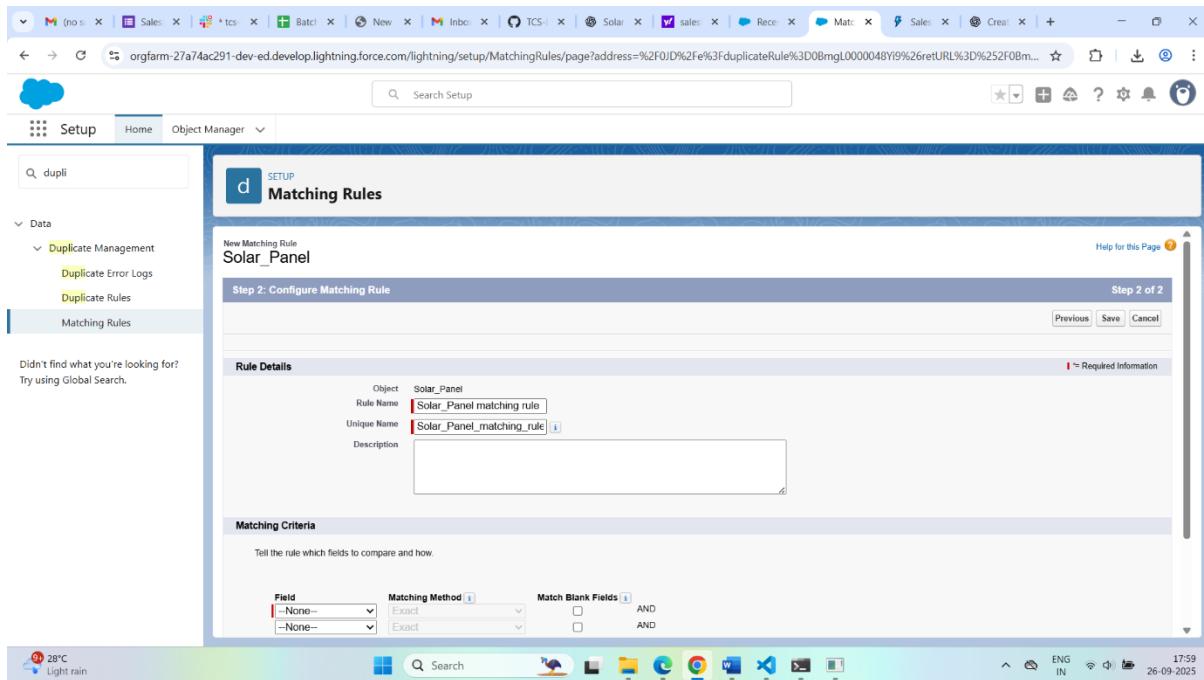
Data Loader is a client application for the bulk import or export of data. Use it to insert, update, delete, or export Salesforce records.





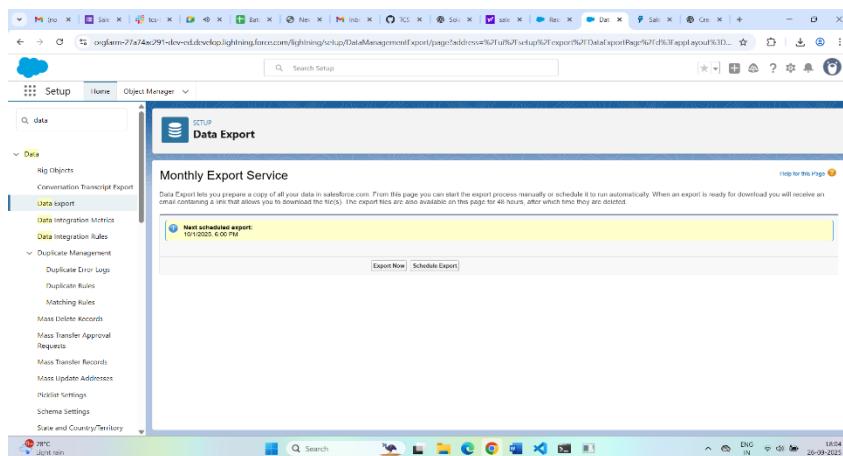
### 3. Duplicate Rules

- Prevent duplicate records from being created.
- Example in this project:
  - Ensure **Solar Panel Serial Number is unique.**
  - Prevent **duplicate customer entries.**
- **Steps:**
  - Setup → Duplicate Rules → New Rule → Choose Object (Customer, Solar Panel) → Add matching criteria → Activate Rule.



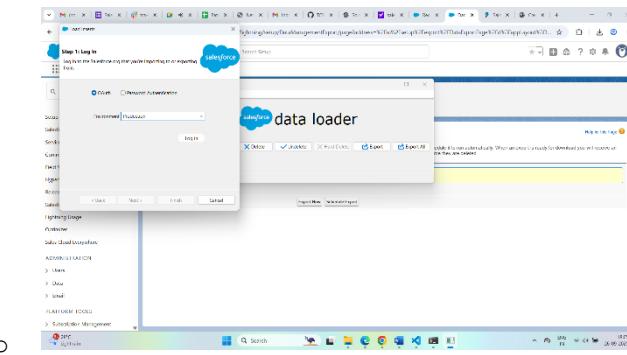
## 4. Data Export & Backup

- Regular data backup ensures you don't lose critical system information.
- Example in this project:
  - Weekly export of **Customer Data, Energy Usage Records, Billing Information.**
- Steps:
  - Setup → Data Export → Schedule Export (Weekly/Monthly) → Select Objects → Download backup files.



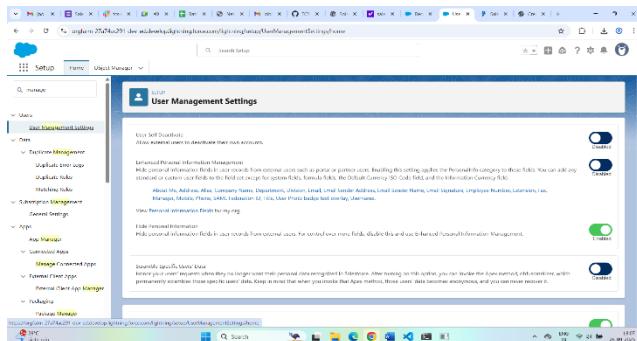
## 5. Change Sets (Sandbox → Production)

- Used to move customizations from Sandbox to Production.
- Example in this project:
  - Move custom objects (Solar Panel, Installation, Energy Usage).
  - Deploy Flows, Validation Rules, and Reports.
- Steps:
  - In Sandbox → Outbound Change Set → Add Components → Upload to Production.
  - In Production → Inbound Change Set → Validate → Deploy.



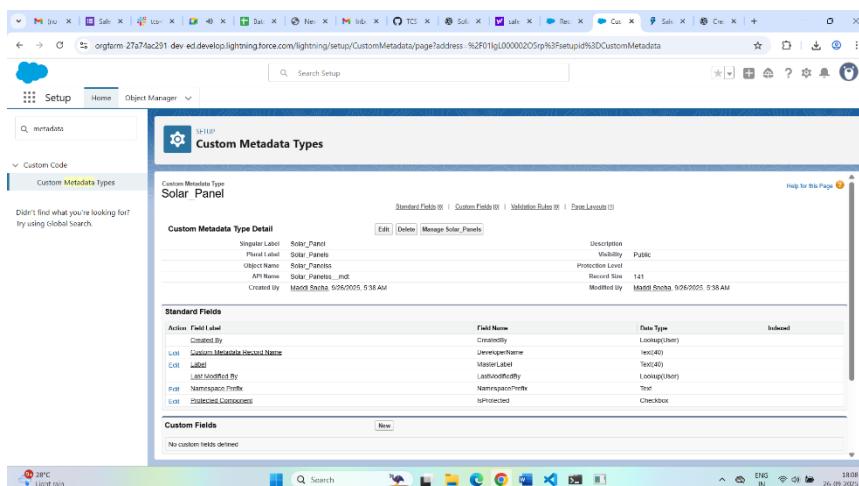
## 6. Managed vs. Unmanaged Packages

- **Unmanaged Package:** Used for internal or learning purposes (best for your project).
- **Managed Package:** Used if you want to publish the Solar Energy CRM on **Salesforce AppExchange**.
- Example:
  - If you only need it for college/learning → use **Unmanaged Package**.
  - If you want to sell/distribute the solution → go for **Managed Package**.



## 7. ANT Migration Tool

- A command-line tool for advanced deployments.
- Example: Developers can deploy **metadata (objects, fields, workflows)** using XML files.
- Best when working on **large-scale enterprise projects**.



## 8. VS Code & Salesforce DX (SFDX)

- For developers who want **faster, version-controlled deployments**.
- Example:
  - Use Git + SFDX to track changes to Solar Panel, Customer, and Energy objects.
  - Deploy metadata directly from VS Code to Production.
- Steps:
  - Install Salesforce CLI → Connect to Org → Use commands like `sfdx force:source:push` or `sfdx force:source:deploy`.

