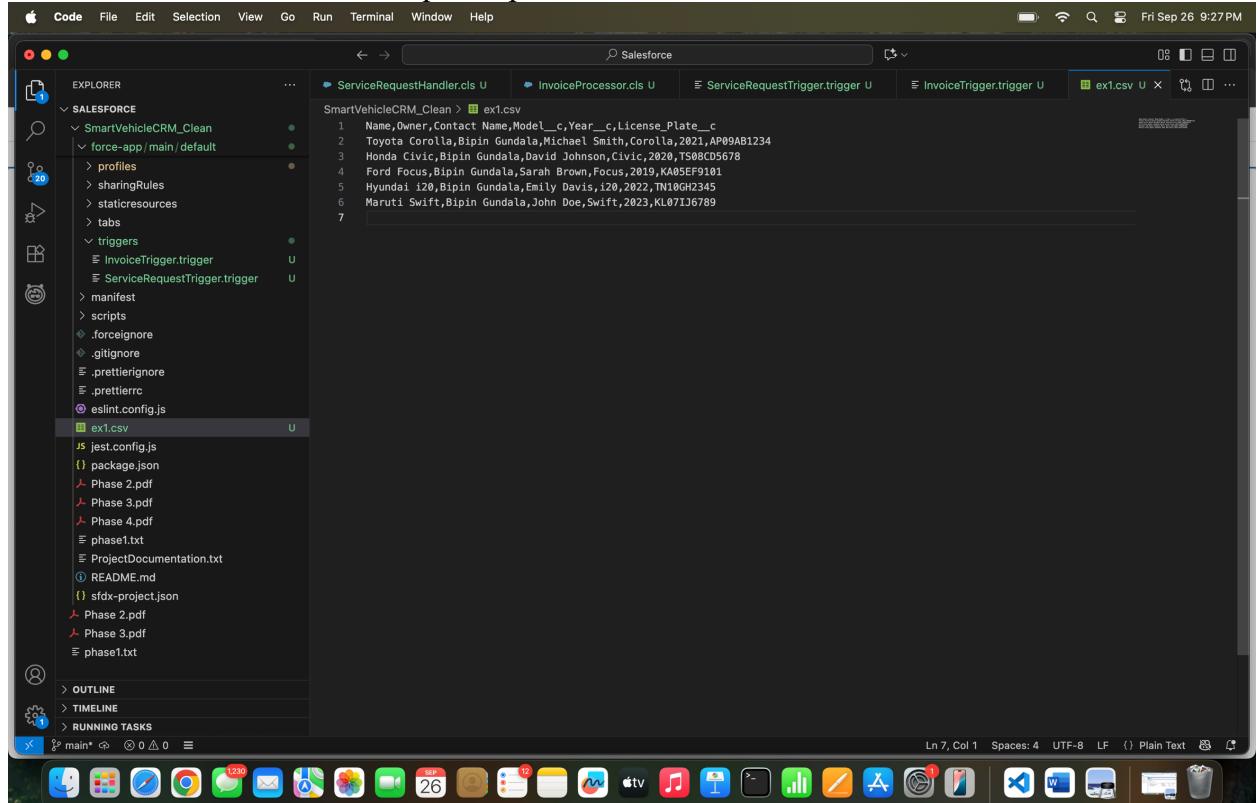


Phase 8: Data Management & Deployment

This phase ensures proper **data handling, backup, and deployment** of metadata across different Salesforce environments (Dev → UAT → Production).

1. Data Import Wizard

- **Use Case:** Load small data sets (up to 50,000 records) into standard/custom objects.
- **Steps:**
 1. Go to **Setup → Data Import Wizard**.
 2. Choose an object (e.g., `Invoice__c`, `Technician__c`).
 3. Upload a `.CSV` file.
 4. Map fields → Review → Start Import.
- **Best For:** Non-technical users, quick upload



The screenshot shows a code editor window for Salesforce. The left sidebar displays the project structure under the `SALESFORCE` folder, including files like `ServiceRequestHandler.cls`, `InvoiceProcessor.cls`, `ServiceRequestTrigger.trigger`, `InvoiceTrigger.trigger`, and `ex1.csv`. The main editor area shows the contents of `ex1.csv` with the following data:

	Name	Owner	Contact Name	Model__c	Year__c	License_Plate__c
1	Toyota Corolla	Bipin Gundala	Michael Smith	Corolla	2021	AP09AB1234
2	Honda Civic	Bipin Gundala	David Johnson	Civic	2020	TS08CD5678
3	Ford Focus	Bipin Gundala	Sarah Brown	Focus	2019	KA05EF9101
4	Hyundai i20	Bipin Gundala	Emily Davis	i20	2022	TN10GH2345
5	Maruti Swift	Bipin Gundala	John Doe	Swift	2023	KL07IJ6789

ds.

The image displays two screenshots of the Salesforce Data Management Data Importer interface, showing the process of importing data from a CSV file.

Screenshot 1: Import your Data into Salesforce

This screenshot shows the initial configuration steps:

- What kind of data are you importing?**: Standard objects (Invoices, Parts Inventories, Service Parts Used, Service Requests, Technicians, Vehicles) and Custom objects are listed.
- What do you want to do?**: Options include "Add new records" (Match by Name, External ID, Vehicle Name, Technician Name, Contact Name), "Trigger workflow rules and processes?", and "Update existing records".
- Where is your data located?**: A CSV file named "ext1.csv" is uploaded, with settings for Character Code (ISO-8859-1 General US & Western European, ISO-LATIN-1) and Values Separated By (Comma).
- Progress Bar**: Shows "Getting closer..." with three steps: Choose data, Edit mapping, and Start import.

Screenshot 2: Review & Start Import

This screenshot shows the review and finalization steps:

- Your selections:** Vehicles, Add new records, ext1.csv.
- Your import will include:** Mapped fields (6).
- Your import will not include:** Unmapped fields (0).
- Progress Bar**: Shows "Great job!" with three steps: Choose data, Edit mapping, and Start import.

Both screenshots are overlaid on a Mac OS X desktop background with various application icons in the Dock.

Review & Start Import

Review your import information and click Start Import.

Your selections:

- Vehicles ✓
- Add new records ✓
- ext1.csv ✓

Mapped fields

6 → 0

Import will include: Mapped fields

Import will not include: Unmapped fields

Congratulations, your import has started!

Click OK to view your import status on the Bulk Data Load Job page.

OK

Cancel Previous Start Import

Bulk Data Load Jobs

Bulk Data Load Job 750gL00000EAZao

View the details of a bulk data load job.

Back to List: Bulk Data Load Jobs

Bulk Data Load Job Detail

Job ID	750gL00000EAZao	Job Type	Bulk V1	Status	Closed
Submitted by	Bipin.Gundala	Operation	Upsert	Total Processing Time (ms)	119
Start Time	9/26/2025, 8:57 AM PST	Queued Batches	0	API Active Processing Time (ms)	61
End Time	9/26/2025, 8:57 AM PST	In Progress Batches	0	Apex Processing Time (ms)	0
Time to Complete (hh:mm:ss)	00:07	Completed Batches	1		
Object	Vehicle	Failed Batches	0		
External ID Field	Name	Progress	100%		
Content Type	CSV	Records Processed	5		
Concurrency Mode	Parallel	Records Failed	0		
API Version	64.0	Retries	0		

Batches

View Request	View Result	Batch ID	Start Time	End Time	Total Processing Time (ms)	API Active Processing Time (ms)	Apex Processing Time (ms)	Records Processed	Records Failed	Retry Count	State Message	Status
View Request	View Result	751gL00000BizuN	9/26/2025, 8:57 AM	9/26/2025, 8:57 AM	119	61	0	5	0	0	Completed	

2. Data Loader

- **Use Case:** Load **large volumes** (up to 5 million records).
 - **Steps:**
 1. Install Salesforce **Data Loader** client.
 2. Log in with **OAuth/username+password+security token**.
 3. Choose **Insert / Update / Upsert / Delete / Export**.
 4. Select object & upload .CSV.
 5. Map fields → Execute.
 - **Best For:** Developers/admins, bulk operations.
-

3. Duplicate Rules

- **Use Case:** Prevent duplicate data like multiple invoices or duplicate technicians.
- **Steps:**
 1. Setup → **Duplicate Rules**.
 2. Create Rule (e.g., for Technician__c check Email).
 3. Add **Matching Rule** (Exact/Custom logic).
 4. Choose Action → Allow, Block, or Report.

The screenshot shows the Salesforce Matching Rules page. The URL is <https://orgfarm-a7a5e8a683-dev-ed.lightning.force.com/lightning/setup/MatchingRules/page?address=%2F0JDgL000004CwKT>. The page title is "Matching Rules". A matching rule named "Vehicle_Duplicate_rule matching rule" is displayed. The rule details are as follows:

Object	Vehicle
Rule Name	Vehicle_Duplicate_rule matching rule
Unique Name	Vehicle_Duplicate_rule_matching_rule
Description	Vehicle: Name EXACT MatchBlank = FALSE
Matching Criteria	Vehicle: Name EXACT MatchBlank = FALSE
Status	Inactive
Created By	Bijin.Gundala, 9/26/2025, 9:05 AM
Modified By	Bijin.Gundala, 9/26/2025, 9:05 AM

The screenshot shows the Salesforce Duplicate Rules page. The URL is <https://orgfarm-a7a5e8a683-dev-ed.lightning.force.com/lightning/setup/DuplicateRules/home>. The page title is "Duplicate Rules". The "All Duplicate Rules" section is visible, showing a list of rules:

Rule Name	Description	Object	Matching Rule	Active	Last Modified By	Last Modified Date
Standard Account Duplicate Rule	Identify accounts that duplicate other accounts.	Account	Standard Account Matching Rule	✓	OEPIC	8/30/2025
Standard Contact Duplicate Rule	Identify contacts that duplicate other contacts and leads.	Contact	Standard Lead Matching Rule Standard Contact Matching Rule	✓	OEPIC	8/30/2025
Standard Lead Duplicate Rule	Identify leads that duplicate other leads and contacts.	Lead	Standard Lead Matching Rule Standard Contact Matching Rule	✓	OEPIC	8/30/2025
Vehicle_Duplicate_rule	No two requests should have same vehicle number	Vehicle	Vehicle_Duplicate_rule matching rule	☐	bij	9/26/2025

4. Data Export & Backup

- **Purpose:** Secure data for recovery.
- **Steps:**
 1. Setup → **Data Export**.
 2. Select objects (Service Requests, Invoice, Parts Inventory).
 3. Schedule Weekly/Monthly backups.
 4. Salesforce provides .ZIP file with .CSVs.

5.VS Code & SFDX

- **Use Case:** Modern Salesforce development & deployments.
- **Steps:**
 1. Install **VS Code + Salesforce Extensions Pack**.
 2. Authorize org:
3. `sfdx auth:web:login -a DevOrg`
 4. Retrieve/Deploy metadata:
5. `sfdx force:source:retrieve -m ApexClass`
6. `sfdx force:source:deploy -m CustomObject:Invoice__c`
 7. Create/Push changes across environments.

The screenshot shows the VS Code interface with the following details:

- File Explorer:** Shows the project structure under "SALESFORCE" including ".sfdx", "Screenshots", "SmartVehicleCRM", and "SmartVehicleCRM_Clean". Inside "SmartVehicleCRM_Clean", there are sub-folders like ".husky", ".sf", ".sfdx", ".vscode", "config", "force-app/main/default", "applications", "aura", "classes", "contentassets", "email", "flexipages", "flows", "layouts", "lwc", "objects", "permissionsets", "profiles", "sharingRules", "staticresources", "tabs", and "triggers". Under "triggers", there are files: "InvoiceTrigger.trigger" and "ServiceRequestTrigger.trigger".
- Code Editor:** Displays Apex code for "InvoiceTrigger.trigger" with the following content:

```

trigger InvoiceTrigger on Invoice__c (before insert, before update, after insert) {
    if (Trigger.isBefore && (Trigger.isInsert || Trigger.isUpdate)) {
        InvoiceTriggerHandler.beforeSave(Trigger.new);
    }
    if (Trigger.isAfter && Trigger.isInsert) {
        InvoiceTriggerHandler.afterInsert(Trigger.new);
    }
}

```
- Terminal:** Shows command-line output for deploying metadata:

```

bipin@bipins-MacBook-Air SmartVehicleCRM_Clean % sf project deploy start --source-path force-app/main/default/classes --target-org SmartVehicleCRM
sf project deploy start --source-path force-app/main/default/triggers --target-org SmartVehicleCRM

> Warning: @salesforce/cli update available from 2.105.6 to 2.106.6.
Error (2): Nonexistent flag: --source-path
See more help with --help

```
- Output:** Shows deployment logs:

```

bipin@bipins-MacBook-Air SmartVehicleCRM_Clean % sf org list
> Warning: @salesforce/cli update available from 2.105.6 to 2.106.6.

Legend: ⚪ =Default DevHub, ⚫ =Default Org   Use --all to see expired and deleted scratch orgs
bipin@bipins-MacBook-Air SmartVehicleCRM_Clean % pwd
/Users/bipin/gundala/Desktop/Salesforce/SmartVehicleCRM_Clean
bipin@bipins-MacBook-Air SmartVehicleCRM_Clean % sf project deploy start --source-path force-app/main/default/classes,force-app/main/default/triggers --target-org SmartVehicleCRM

```
- Status Bar:** Shows "Ln 9, Col 1" and "Spaces: 4" and "UTF-8 LF".

The screenshot shows the Salesforce IDE running in a Mac OS X environment. The top menu bar includes Apple, Code, File, Edit, Selection, View, Go, Run, Terminal, Window, Help, and Fri Sep 26 9:03PM. The left sidebar displays the Explorer, showing a tree structure of Salesforce components like ServiceRequestHandler.cls, InvoiceProcessor.cls, ServiceRequestTrigger.trigger, InvoiceTrigger.trigger, and various SmartVehicleCRM classes and triggers. The bottom status bar indicates the current file is main*, with 1300 characters, and the terminal output shows a successful metadata retrieval command:

```
binpingundala@Bipins-MacBook-Air SmartVehicleCRM_Clean % sf project retrieve start --manifest manifest/package.xml --target-org SmartVehicleCRM_Clean
Warning: @salesforce/cli update available from 2.105.6 to 2.106.6.
Retrieving Metadata
Preparing retrieve request 8ms
Sending request to org 387ms
Waiting for the org to respond 7.15s
Done 0ms
Status: Succeeded
Elapsed Time: 7.55s
```

Below this, a table titled "Retrieved Source" lists the retrieved components:

State	Name	Type	Path
Changed	Invoice_c.Invoice_Approval_Process	ApprovalProcess	force-app/main/default/approvalProcesses/Invoice_c.Invoice_Approval_Process.approvalProcess-meta.xml
Changed	Invoice_c.Amount_c	CustomField	force-app/main/default/objects/Invoice_c/fields/Amount_c.field-meta.xml
Changed	Invoice_c.Service_Request__c	CustomField	force-app/main/default/objects/Invoice_c/fields/Service_Request__c.field-meta.xml
Changed	Invoice_c.Status_c	CustomField	force-app/main/default/objects/Invoice_c/fields/Status_c.field-meta.xml
Changed	Parts_Inventory_c.Cost_c	CustomField	force-app/main/default/objects/Parts_Inventory_c/cfields/Cost_c.field-meta.xml
Changed	Parts_Inventory_c.Name_c	CustomField	force-app/main/default/objects/Parts_Inventory_c/cfields/Name_c.field-meta.xml
Changed	Parts_Inventory_c.Reorder_Level_c	CustomField	force-app/main/default/objects/Parts_Inventory_c/cfields/Reorder_Level_c.field-meta.xml
Changed	Parts_Inventory_c.Stock_c	CustomField	force-app/main/default/objects/Parts_Inventory_c/cfields/Stock_c.field-meta.xml
Changed	Service_Parts_Used_c.Part_c	CustomField	force-app/main/default/objects/Service_Parts_Used_c/cfields/Part_c.field-meta.xml
Changed	Service_Parts_Used_c.Quantity_Used_c	CustomField	force-app/main/default/objects/Service_Parts_Used_c/cfields/Quantity_Used_c.field-meta.xml
Changed	Service_Parts_Used_c.Service_Request_c	CustomField	force-app/main/default/objects/Service_Parts_Used_c/cfields/Service_Request_c.field-meta.xml
Changed	Service_Request_c.Customer_c	CustomField	force-app/main/default/objects/Service_Request_c/cfields/Customer_c.field-meta.xml
Changed	Service_Request_c.Last_Service_Date_c	CustomField	force-app/main/default/objects/Service_Request_c/cfields/Last_Service_Date_c.field-meta.xml

Salesforce

EXPLORER

SALESFORCE

> .sfdx

> Screenshots

> SmartVehicleCRM

> SmartVehicleCRM_Clean

> .husky

> .sf

> .sfdx

> .vscode

> config

> force-app/main/default

> applications

> approvalProcesses

> aura

> classes

> contentassetsets

> email

> flexipages

> flows

> layouts

> lwc

> objects

> permissionsets

> profiles

> sharingRules

> staticresources

> tabs

> triggers

InvoiceTrigger.trigger

ServiceRequestTrigger.trigger

manifest

OUTLINE

TIMELINE

RUNNING TASKS

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

SmartVehicleCRM_Clean > force-app / main > default > triggers > InvoiceTrigger.trigger > InvoiceTrigger

1 trigger InvoiceTrigger on Invoice c (before insert, before update, after insert) {

bipin@undataBipins-MacBook-Air ~ % sfdx project retrieve start --manifest manifest/package.xml --target-org SmartVehicleCRM_Clean

	Changed	Service_Parts_Used_c.Service_Request__c	CustomField	force-app/main/default/objects/Service_Parts_Used_c/fi
	Changed	Service_Request__c.Customer__c	CustomField	lds/Service_Request__c.field-meta.xml
	Changed	Service_Request__c.Last_Service_Date__c	CustomField	force-app/main/default/objects/Service_Request__c/fiel
	Changed	Service_Request__c.Priority__c	CustomField	ds/Customer__c.field-meta.xml
	Changed	Service_Request__c.Service_Date__c	CustomField	force-app/main/default/objects/Service_Request__c/fiel
	Changed	Service_Request__c.Status__c	CustomField	ds/Last_Service_Date__c.field-meta.xml
	Changed	Service_Request__c.Techician__c	CustomField	force-app/main/default/objects/Service_Request__c/fiel
	Changed	Service_Request__c.Type__c	CustomField	ds/Priority__c.field-meta.xml
	Changed	Service_Request__c.Vehicle__c	CustomField	force-app/main/default/objects/Service_Request__c/fiel
	Changed	Technician__c.Availability__c	CustomField	ds/Service_Request__c.field-meta.xml
	Changed	Technician__c.Skills__c	CustomField	force-app/main/default/objects/Technician__c/field
	Changed	Technician__c.User__c	CustomField	s/Availability__c.field-meta.xml
	Changed	Vehicle__c.Customer__c	CustomField	force-app/main/default/objects/Technician__c/fields/Sk
	Changed	Vehicle__c.Last_Service_Date__c	CustomField	ills__c.field-meta.xml
	Changed	Vehicle__c.Make__c	CustomField	force-app/main/default/objects/Technician__c/fields/U
	Changed	Vehicle__c.Model__c	CustomField	ser__c.field-meta.xml
	Changed	Vehicle__c.Year__c	CustomField	force-app/main/default/objects/Vehicle__c/fields/Custo
	Changed	Invoice__c	CustomObject	mer__c.field-meta.xml
	Changed	Parts_Inventory__c	CustomObject	force-app/main/default/objects/Vehicle__c/fields/Last
	Changed	Service_Parts_Used__c	CustomObject	_Service__c.field-meta.xml
	Changed	Service_Request__c	CustomObject	force-app/main/default/objects/Vehicle__c/fields/Make
	Changed	Technician__c	CustomObject	_c.field-meta.xml
	Changed	Vehicle__c	CustomObject	force-app/main/default/objects/Vehicle__c/fields/Model
				_c.field-meta.xml
				force-app/main/default/objects/Vehicle__c/fields/Year
				_c.field-meta.xml
				force-app/main/default/objects/Invoice__c/Invoice__c.o
				bject.meta.xml
				force-app/main/default/objects/Parts_Inventory__c/Part
				_s.object-meta.xml
				force-app/main/default/objects/Service_Parts_Used__c/S
				ervice_Parts_Used__c.object-meta.xml
				force-app/main/default/objects/Service_Request__c/Se
				rvice_Request__c.object-meta.xml
				force-app/main/default/objects/Technician__c/Techni
				cian__c.object-meta.xml
				force-app/main/default/objects/Vehicle__c/Vehicle__c

Ln 9, Col 1 Spaces: 4 UTF-8

Salesforce

SmartVehicleCRM_Clean > force-app > main > default > triggers > InvoiceTrigger.trigger (before insert, before update, after insert) {
1 trigger InvoiceTrigger on Invoice c (before insert, before update, after insert) {

Object	Type	File Path
Service_Parts_Used_c	CustomObject	force-app/main/default/objects/Service_Parts_Used_c/Service_Parts_Used_c.object-meta.xml
Service_Request_c	CustomObject	force-app/main/default/objects/Service_Request_c/Service_Request_c.object-meta.xml
Technician_c	CustomObject	force-app/main/default/objects/Technician_c/Technician_c.object-meta.xml
Vehicle_c	CustomObject	force-app/main/default/objects/Vehicle_c/Vehicle_c.object-meta.xml
Invoice_Approval_Request	EmailTemplate	force-app/main/default/email/unfiledpublic/Invoice_Approval_Request_email-meta.xml
Invoice_Approval_Request	EmailTemplate	force-app/main/default/email/unfiledpublic/Invoice_Approval_Request_email-meta.xml
Low_Stock_Alert	EmailTemplate	force-app/main/default/email/unfiled\$public/Low_Stock_Alert_email-meta.xml
Preventive_Maintenance_Reminder	EmailTemplate	force-app/main/default/email/unfiledpublic/Preventive_Maintenance_Reminder_email-meta.xml
Preventive_Maintenance_Reminder	EmailTemplate	force-app/main/default/email/unfiled\$public/Preventive_Maintenance_Reminder_email-meta.xml
Service_Request_Confirmation	EmailTemplate	force-app/main/default/email/unfiledpublic/Service_Request_Confirmation_email-meta.xml
Service_Request_Status_Change	EmailTemplate	force-app/main/default/email/unfiled\$public/Service_Request_Status_Change_email-meta.xml
Service_Request_Status_Change	EmailTemplate	force-app/main/default/email/unfiled\$public/Service_Request_Status_Change_email-meta.xml
Auto_Assign_Technician	Flow	force-app/main/default/flows/Auto_Assign_Technician.flow-meta.xml
Invoice_Approval_Process	Flow	force-app/main/default/flows/Invoice_Approval_Process.flow-meta.xml
Low_Stock_Alert_Flow	Flow	force-app/main/default/flows/Low_Stock_Alert_Flow.flow-meta.xml
Preventive_Maintenance_Reminder_Flow	Flow	force-app/main/default/flows/Preventive_Maintenance_Reminder_Flow.flow-meta.xml
Service_Request_Status_Change_Email	Flow	force-app/main/default/flows/Service_Request_Status_Change_Email.flow-meta.xml
Invoice_c-Invoice Layout	Layout	force-app/main/default/layouts/Invoice_c-Invoice Layout.layout-meta.xml
Parts_Inventory__c-Parts Inventory Layout	Layout	force-app/main/default/layouts/Parts_Inventory__c-Parts Inventory Layout.layout-meta.xml
Service_Parts_Used_c-Service Parts Used Layout	Layout	force-app/main/default/layouts/Service_Parts_Used_c-Service Parts Used Layout.layout-meta.xml

bipungundala@Bipins-MacBook-Air SmartVehicleCRM_Clean % sf project retrieve start --manifest manifest/package.xml --target-org SmartVehicleCRM

Ln 9, Col 1 Spaces: 4 UTF-8

Salesforce

SmartVehicleCRM_Clean > force-app > main > default > triggers > InvoiceTrigger.trigger (before insert, before update, after insert) {
1 trigger InvoiceTrigger on Invoice c (before insert, before update, after insert) {

Object	Type	File Path
Auto_Assign_Technician	Flow	quest_Status_Change.email-meta.xml
Invoice_Approval_Process	Flow	force-app/main/default/flows/Auto_Assign_Technician.flow-meta.xml
Low_Stock_Alert_Flow	Flow	force-app/main/default/flows/Invoice_Approval_Process.flow-meta.xml
Preventive_Maintenance_Reminder_Flow	Flow	force-app/main/default/flows/Low_Stock_Alert_Flow.flow-meta.xml
Service_Request_Status_Change_Email	Flow	force-app/main/default/flows/Preventive_Maintenance_Reminder_Flow.flow-meta.xml
Invoice_c-Invoice Layout	Layout	force-app/main/default/layouts/Service_Request_Status_Change_Email.layout-meta.xml
Parts_Inventory__c-Parts Inventory Layout	Layout	force-app/main/default/layouts/Invoice_c-Invoice Layout.layout-meta.xml
Service_Parts_Used_c-Service Parts Used Layout	Layout	force-app/main/default/layouts/Parts_Inventory__c-Parts Inventory Layout.layout-meta.xml
Service_Request_c-Service Request Layout	Layout	force-app/main/default/layouts/Service_Parts_Used_c-Service Request Layout.layout-meta.xml
Technician_c-Technician Layout	Layout	force-app/main/default/layouts/Service_Request_c-Service Request Layout.layout-meta.xml
Vehicle_c-Vehicle Layout	Layout	force-app/main/default/layouts/Technician_c-Technician Layout.layout-meta.xml
Invoice_c.All	ListView	force-app/main/default/layouts/Vehicle_c-Vehicle Layout.layout-meta.xml
Parts_Inventory__c.All	ListView	force-app/main/default/layouts/Invoice_c.All.listView-meta.xml
Service_Parts_Used_c.All	ListView	force-app/main/default/layouts/Parts_Inventory__c.All.listView-meta.xml
Service_Request_c.All	ListView	force-app/main/default/layouts/Service_Parts_Used_c.All.listView-meta.xml
Technician_c.All	ListView	force-app/main/default/layouts/Service_Request_c.All.listView-meta.xml
Customer Service Agent Profile	Profile	force-app/main/default/profiles/Customer Service Agent Profile.profile-meta.xml
Service Manager Profile	Profile	force-app/main/default/profiles/Service Manager Profile.profile-meta.xml
Technician Profile	Profile	force-app/main/default/profiles/Technician Profile.profile-meta.xml
Service_Request_c	SharingRules	force-app/main/default/sharingRules/Service_Request_c.sharingRules-meta.xml
Invoice_c.Amount_Positive	ValidationRule	force-app/main/default/validationRules/Invoice_c.Amount_Positive.validationRule-meta.xml

bipungundala@Bipins-MacBook-Air SmartVehicleCRM_Clean % sf project retrieve start --manifest manifest/package.xml --target-org SmartVehicleCRM

Ln 9, Col 1 Spaces: 4 UTF-8