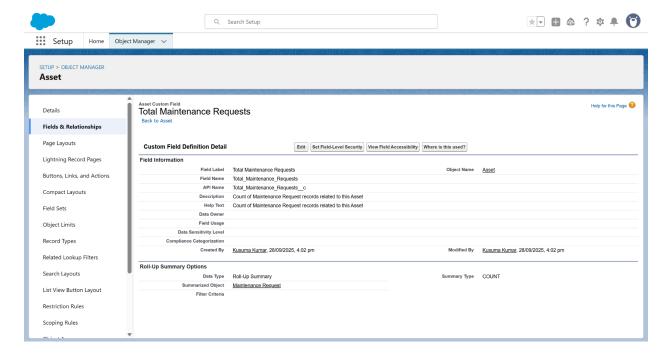# Phase 3: Data Modeling & Relationships
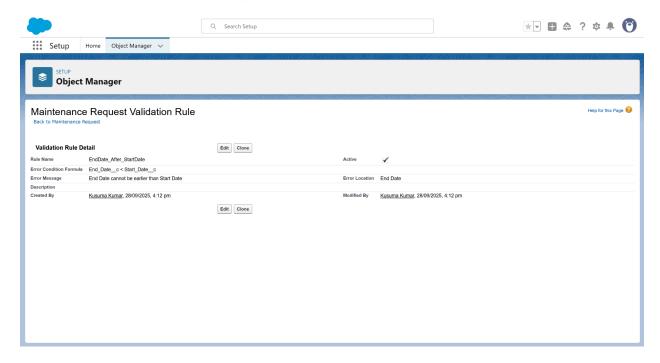
1. Roll-Up Summary Fields
- On the Maintenance_Request__c object:
  - Open Requests Count: Counts all active maintenance requests related to a particular Asset or Homeowner.
  - Use for capacity management (e.g., max simultaneous requests per asset) and reporting.
- On the Asset__c object:
  - Total Maintenance Requests: Counts all maintenance requests linked to the asset.
  - Useful for asset maintenance history overviews.

2. Validation Rules
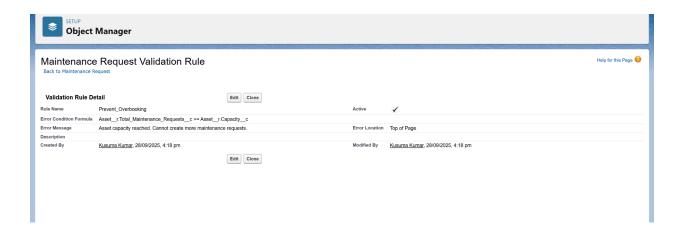- Maintenance Request Date Validation (Maintenance_Request__c) :
  - Ensure End Date cannot be earlier than Start Date.
- Prevent Overbooking of Maintenance Slots (Maintenance_Request__c):
  - Validation Rule to block new requests if the current open requests count for an Asset exceeds its allowed capacity.
  - Error Message example: "Asset capacity reached. Cannot create more maintenance requests."

- Status Validation:
  - Ensure certain status transitions are valid (e.g., cannot close a request without resolution).
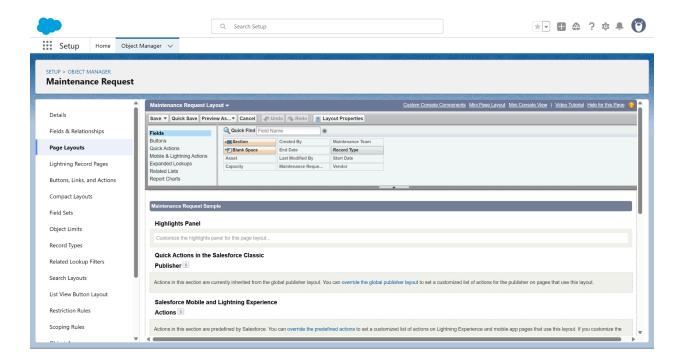

3. Page Layouts & Record Types

- Asset Page Layout: Displays asset details, related maintenance requests, vendors, and history logs.
- Maintenance Request Page Layout: Shows request details, linked assets, assigned maintenance team, and status.

- Define Record Types for Maintenance Requests to differentiate types such as Emergency Repair, Preventive Maintenance, or Vendor Service Call.

4. Compact Layouts (Mobile)

- Asset Compact Layout: Asset Name, Location, Status.
- Maintenance Request Compact Layout: Request Number, Status, Assigned Team Member.

5. Schema Builder Visualization

- Create an ER diagram in Schema Builder including:
  - Asset, Maintenance_Request, Vendor, Maintenance_Team (custom user or contact), and Homeowner.
- Visualize Master-Detail and Lookup relationships ensuring data integrity and security inheritance.

6. Tabs & App Navigation

- Create Custom Tabs for key objects: Asset, Maintenance Request, Vendor, Maintenance Team.
- Add these tabs to the Home Maintenance Repair Management app via the App Manager.
- This enables users to access data conveniently through the App Launcher.

Schema Builder Visualization

Tabs & App Navigation

7. Data Dictionary

- Prepare a detailed data dictionary with:
  - Names of custom objects and fields.
  - Data types, relationships, validation logic.
  - Purpose of each field and business rules applied.

8. Sample Data Preparation

- Create sample CSV files for Assets, Maintenance Requests, Vendors, Maintenance Team members.
- Use Data Import Wizard or Data Loader to import sample records.
- Verify successful import and data integrity.

MaintanenceRequest.csv

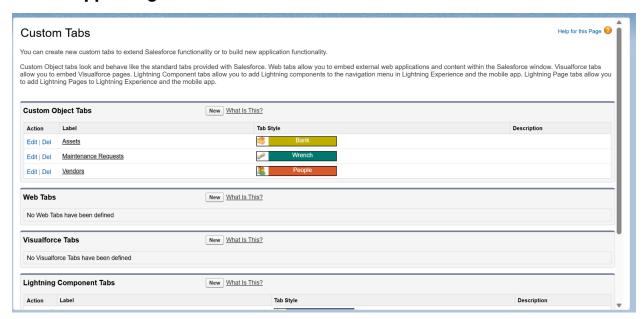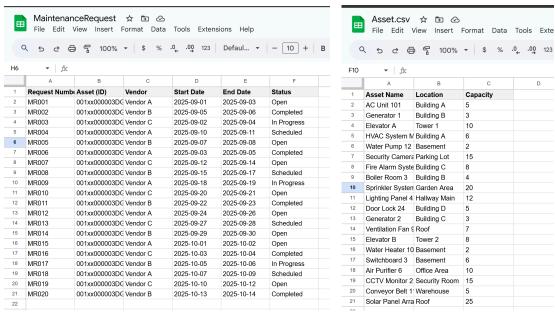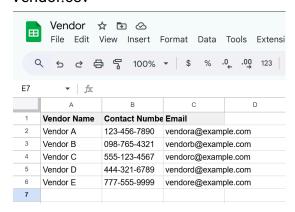|	Request Number	Asset (ID)	Vendor	Start Date	End Date	Status
1	Request Numbe	Asset (ID)	Vendor	Start Date	End Date	Status
2	MR001	001xx000003DC	Vendor A	2025-09-01	2025-09-03	Open
3	MR002	001xx000003DC	Vendor B	2025-09-05	2025-09-06	Completed
4	MR003	001xx000003DC	Vendor C	2025-09-02	2025-09-04	In Progress
5	MR004	001xx000003DC	Vendor A	2025-09-10	2025-09-11	Scheduled
6	MR005	001xx000003DC	Vendor B	2025-09-07	2025-09-08	Open
7	MR006	001xx000003DC	Vendor A	2025-09-03	2025-09-05	Completed
8	MR007	001xx000003DC	Vendor C	2025-09-12	2025-09-14	Open
9	MR008	001xx000003DC	Vendor B	2025-09-15	2025-09-17	Scheduled
10	MR009	001xx000003DC	Vendor A	2025-09-18	2025-09-19	In Progress
11	MR010	001xx000003DC	Vendor C	2025-09-20	2025-09-21	Open
12	MR011	001xx000003DC	Vendor B	2025-09-22	2025-09-23	Completed
13	MR012	001xx000003DC	Vendor A	2025-09-24	2025-09-26	Open
14	MR013	001xx000003DC	Vendor C	2025-09-27	2025-09-28	Scheduled
15	MR014	001xx000003DC	Vendor B	2025-09-29	2025-09-30	Open
16	MR015	001xx000003DC	Vendor A	2025-10-01	2025-10-02	Open
17	MR016	001xx000003DC	Vendor C	2025-10-03	2025-10-04	Completed
18	MR017	001xx000003DC	Vendor B	2025-10-05	2025-10-06	In Progress
19	MR018	001xx000003DC	Vendor A	2025-10-07	2025-10-09	Scheduled
20	MR019	001xx000003DC	Vendor C	2025-10-10	2025-10-12	Open
21	MR020	001xx000003DC	Vendor B	2025-10-13	2025-10-14	Completed

Asset.csv

	Asset Name	Location	Capacity	
1	Asset Name	Location	Capacity	
2	AC Unit 101	Building A	5	
3	Generator 1	Building B	3	
4	Elevator A	Tower 1	10	
5	HVAC System M	Building A	6	
6	Water Pump 12	Basement	2	
7	Security Camera	Parking Lot	15	
8	Fire Alarm Syste	Building C	8	
9	Boiler Room 3	Building B	4	
10	Sprinkler System	Garden Area	20	
11	Lighting Panel 4	Hallway Main	12	
12	Door Lock 24	Building D	5	
13	Generator 2	Building C	3	
14	Ventilation Fan 9	Roof	7	
15	Elevator B	Tower 2	8	
16	Water Heater 10	Basement	2	
17	Switchboard 3	Basement	6	
18	Air Purifier 6	Office Area	10	
19	CCTV Monitor 2	Security Room	15	
20	Conveyor Belt 1	Warehouse	5	
21	Solar Panel Arra	Roof	25	

Vendor.csv

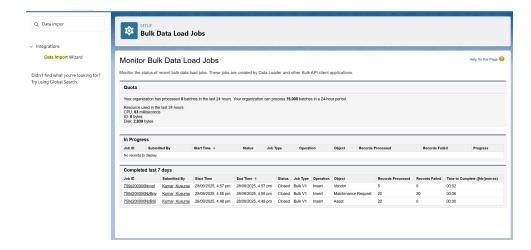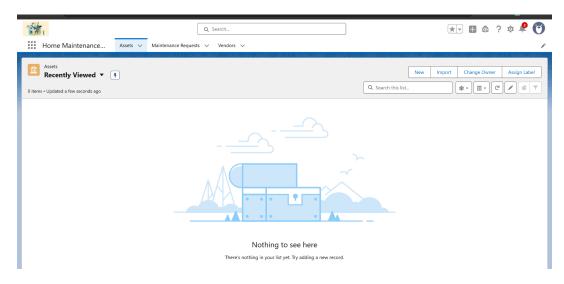|	Vendor Name	Contact Number	Email	
1	Vendor Name	Contact Numbe	Email	
2	Vendor A	123-456-7890	vendora@example.com	
3	Vendor B	098-765-4321	vendorb@example.com	
4	Vendor C	555-123-4567	vendorc@example.com	
5	Vendor D	444-321-6789	vendord@example.com	
6	Vendor E	777-555-9999	vendore@example.com	
7				

9. Testing & Verification

- Create Assets with defined capacity limits (e.g., max concurrent requests).
- Open several Maintenance Requests linked to an asset.
- Attempt to create a new request exceeding capacity → should be blocked by Validation Rule.
- Test request lifecycle updates (open, in progress, closed).
- Verify Roll-Up Summary fields auto-update as requests are created or closed.
- Test date validations for request start and end dates.
- Confirm layouts display required related lists and fields

Home Maintenance and Repair Management Lightning App

Testing and Validation