Property Management Application

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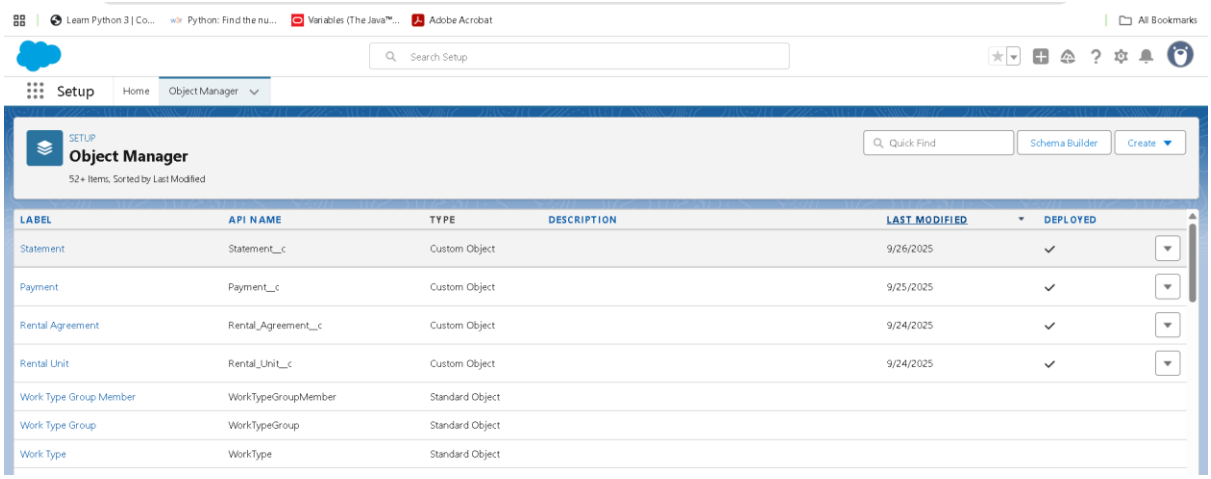
Phase 3: Data Modeling & Relationships Report

1. Overview

This phase focuses on designing and implementing the data model for the property management system, including custom objects, fields, relationships, and user interface configurations. The goal is to establish a robust foundation for managing Rental Units, Rental Agreements, Payments, and Statements, ensuring scalability and efficient data management. All custom objects and their relationships have been created and configured in the Salesforce org.

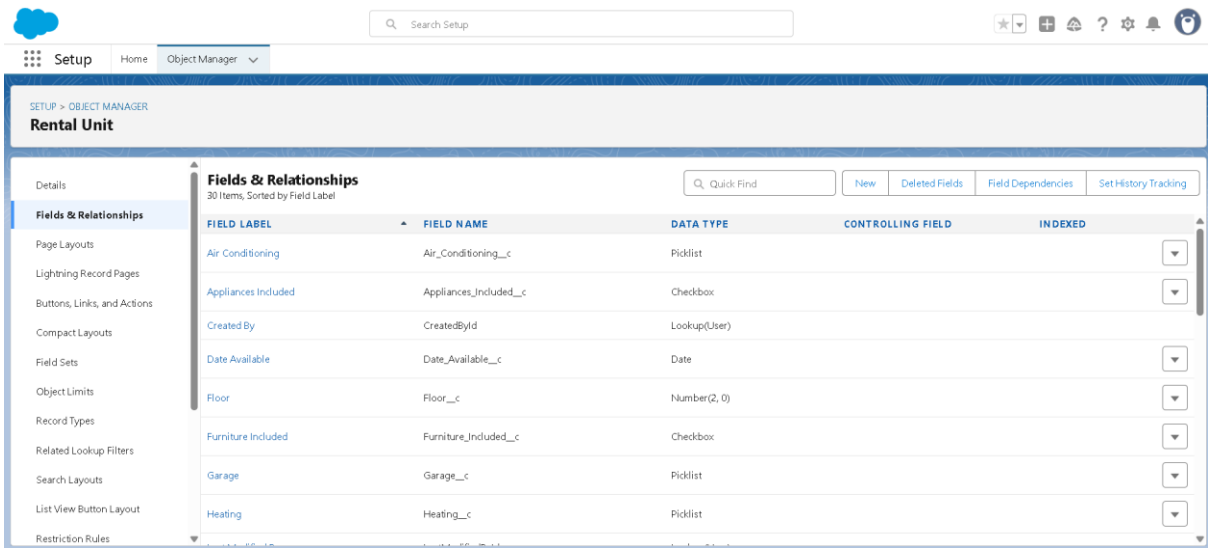
2. Standard & Custom Objects

- **Custom Objects Created**:
    - Rental_Unit__c: Represents individual rental units with detailed attributes.
    - Rental_Agreement__c: Manages agreements between landlords and renters, linked to Rental_Unit__c and Contact.
    - Payment__c: Tracks payment transactions related to Statement__c.
    - Statement__c: Records billing statements linked to Rental_Agreement__c.
- **Standard Objects Utilized**:
    - Contact: Used as the primary object for renters via a Master-Detail relationship from Rental_Agreement__c.

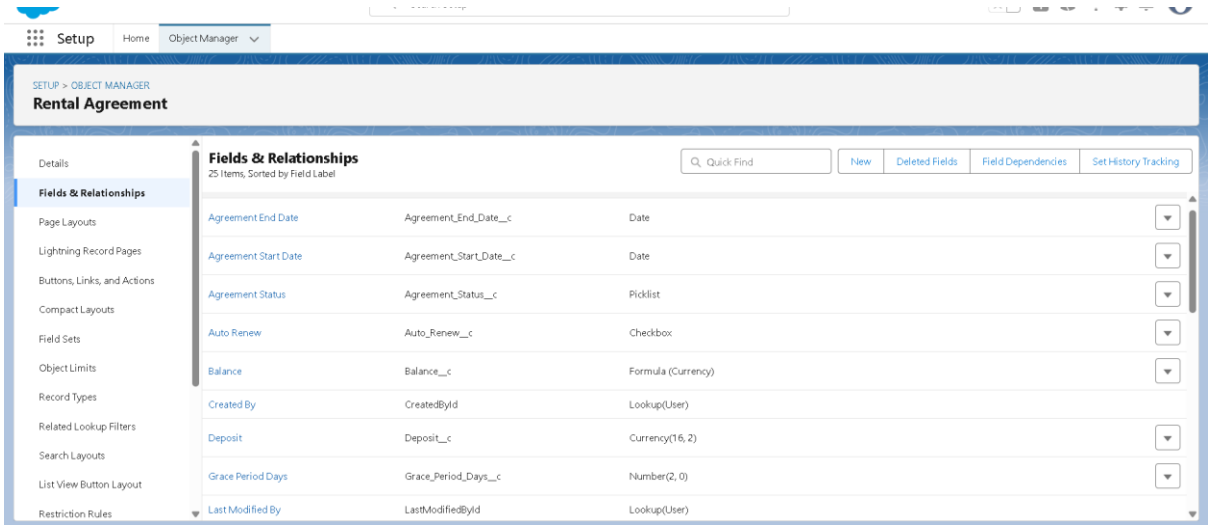


3. Fields

- **Rental_Unit__c Fields**:
    - Unit #: Text (Length: 255)
    - Number of Bedrooms: Number (2, 0 decimals)
    - Number of Bathrooms: Number (2, 0 decimals)
    - Floors: Number (2, 0 decimals)
    - Garage: Picklist (Attached, Detached, Assigned Parking)
    - Number of Parking Spaces: Number (2, 0 decimals)
    - Laundry: Picklist (In-unit hook-ups, Community)
    - Appliances Included: Checkbox
    - Furniture Included: Checkbox
    - Total Square Feet: Number (15, 3 decimals)
    - Air Conditioning: Picklist (Window Unit, Ceiling Fan, Central)
    - Heating: Picklist (Forced Air, Central)
    - Pets Allowed: Checkbox
    - Utilities Included: Multiselect Picklist (Cold Water, Hot Water, Gas, Electric, Sewage, Trash)

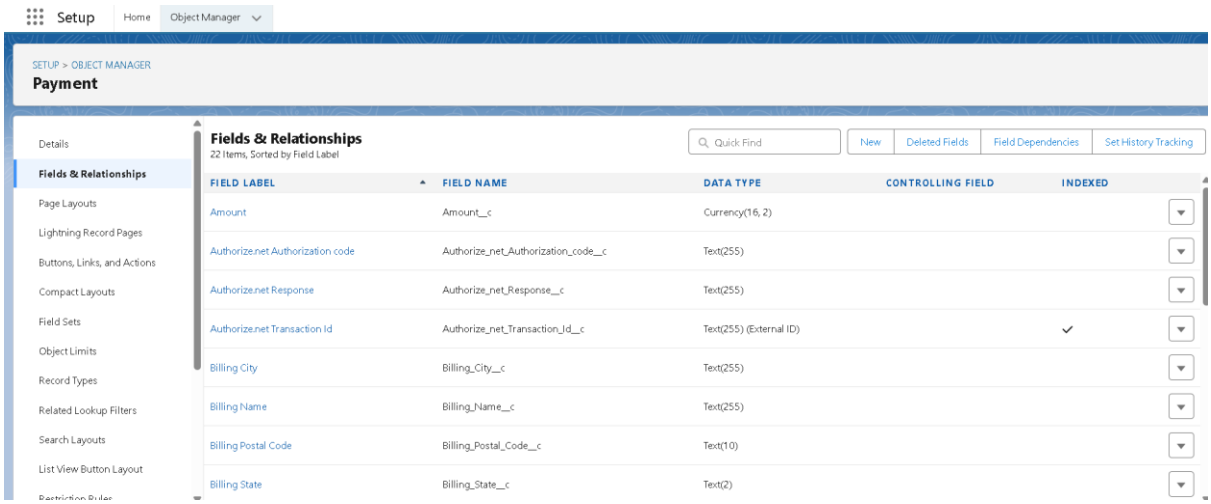


- **Rental_Agreement__c Fields**:
    - Rental Unit: Master-Detail (Rental_Unit__c)
    - Renter: Master-Detail (Contact)
    - Pet Deposit: Currency (16, 2 decimals)
    - Rental Has Pets: Checkbox
    - Deposit: Currency (16, 2 decimals)
    - Rental Amount: Currency (16, 2 decimals)
    - Total Deposit: Formula (Currency 16, 2 decimals) = Pet_Deposit__c + Deposit__c
    - Total Invoiced: Currency (16, 3 decimals) - Apex roll-up of Statement__c amounts
    - Total Payments: Currency (16, 2 decimals) - Apex roll-up of Payment__c amounts
    - Balance: Formula (Currency 16, 2 decimals) = Total_Invoiced__c - Total_Payments__c



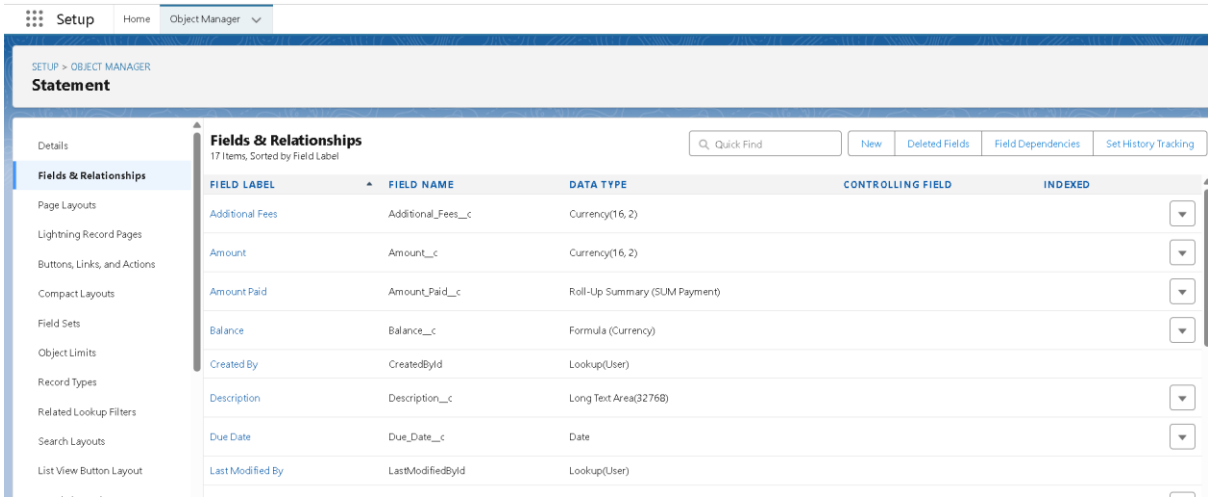
- **Payment__c Fields**:
    - Amount: Currency (16, 2 decimals)
    - Statement: Master-Detail (Statement__c)
    - Status: Picklist (Paid, Failed)
    - Payment Date: Date/Time
    - Authorize.net Transaction Id: Text (Length: 255, External Id)

- Authorize.net Authorization Code: Text (Length: 255)
- Authorize.net Response: Text (Length: 255)
- Billing Name: Text (Length: 255)
- Billing Street: Text Area (Length: 255)
- Billing City: Text (Length: 255)
- Billing State: Text (Length: 2)
- Billing Postal Code: Text (Length: 10)
- Check Account Number: Encrypted Text (Length: 128, Mask: 4)
- Check Routing Number: Encrypted Text (Length: 128, Mask: 4)
- Credit Card Number: Encrypted Text (Length: 16, Mask: Credit Card)
- Credit Card Expiration Month: Picklist (January - December)
- Expiration Year: Text (Length: 4)
- Credit Card Security Code: Encrypted Text (Length: 4, Mask: All)



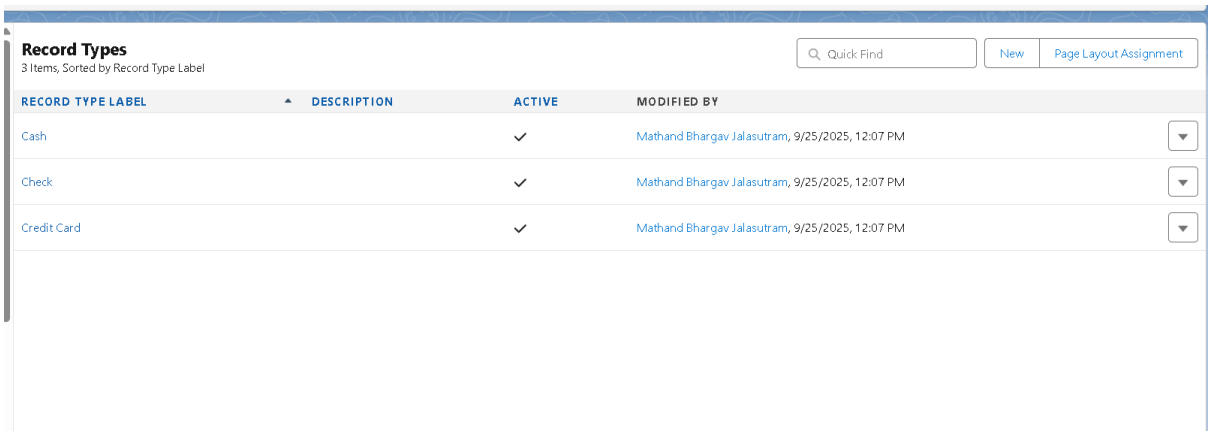
- **Statement__c Fields**:
  - Amount: Currency (16, 2 decimals)
  - Additional Fees: Currency (16, 2 decimals, Default: 0)
  - Total Amount: Formula (Currency 16, 2) = Amount__c + Additional_Fees__c
  - Rental Agreement: Lookup (Rental_Agreement__c)
  - Statement Date: Date (Default: Today())
  - Due Date: Date (Default: Today() + 15)

- Status: Picklist (Issued, Paid, Past Due)
- Amount Paid: Roll-up Summary (SUM of Payment__c.Amount__c where Status__c = Paid)



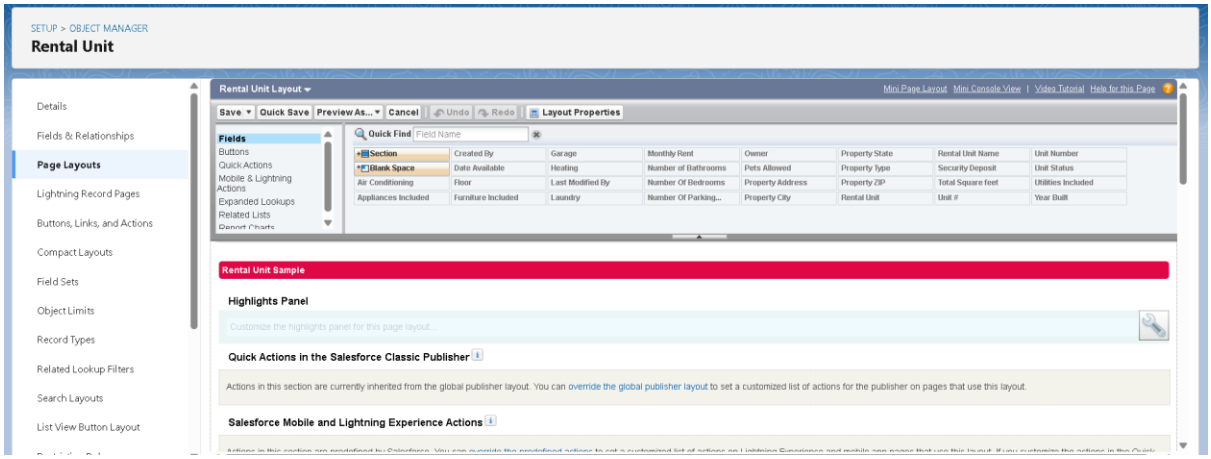
4. Record Types

- No record types were created for this phase, as the initial data model does not require different business processes or page layouts based on record variations. Record types can be added in future phases if needed to differentiate rental unit types or agreement statuses.

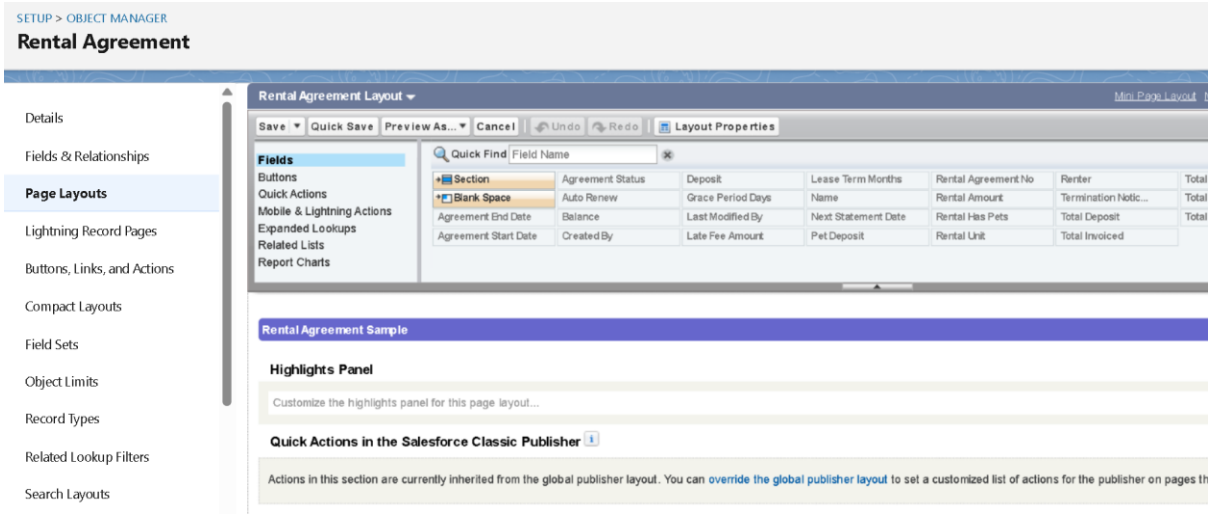


5. Page Layouts

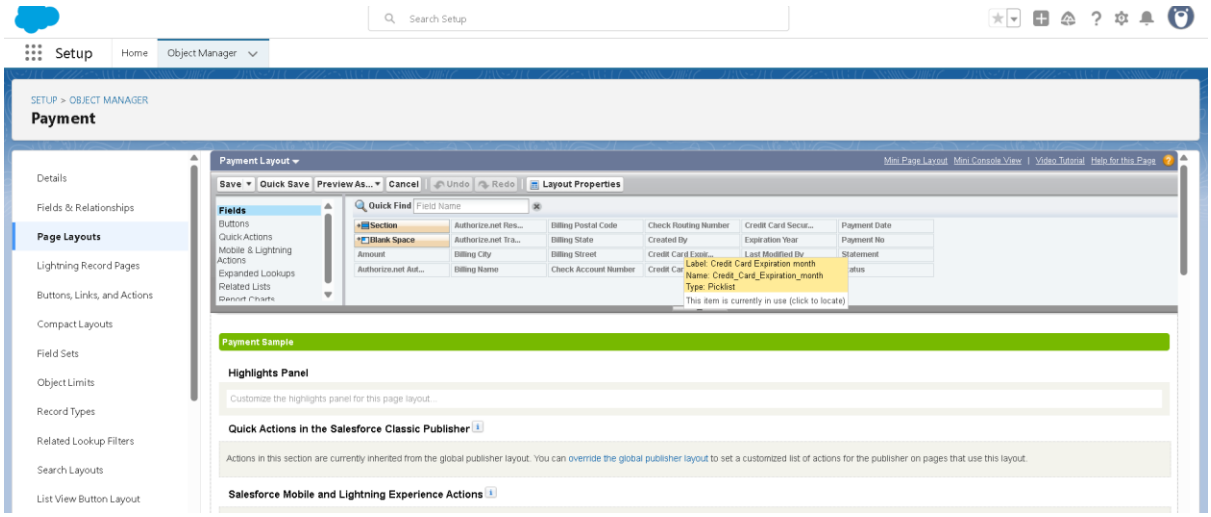
- **Rental_Unit__c Page Layout**:
  - Created a custom page layout named "Rental Unit Detail" to display all fields in a logical order: Unit Details (Unit #, Bedrooms, Bathrooms, Floors), Amenities (Garage, Parking Spaces, Laundry, Appliances Included, Furniture Included, Square Feet, Air Conditioning, Heating, Pets Allowed, Utilities Included).
  - Added a related list for Rental_Agreement__c to view associated agreements.



- **Rental_Agreement__c Page Layout**:
    - Created "Rental Agreement Detail" layout with sections for Agreement Details (Rental Unit, Renter, Pet Deposit, Rental Has Pets, Deposit, Rental Amount, Total Deposit, Balance) and Financials (Total Invoiced, Total Payments).
    - Included related lists for Statement__c and Payment__c.



- **Payment__c and Statement__c Page Layouts**:
    - Default layouts were customized to include all fields in sections: Payment Details and Statement Details, respectively.

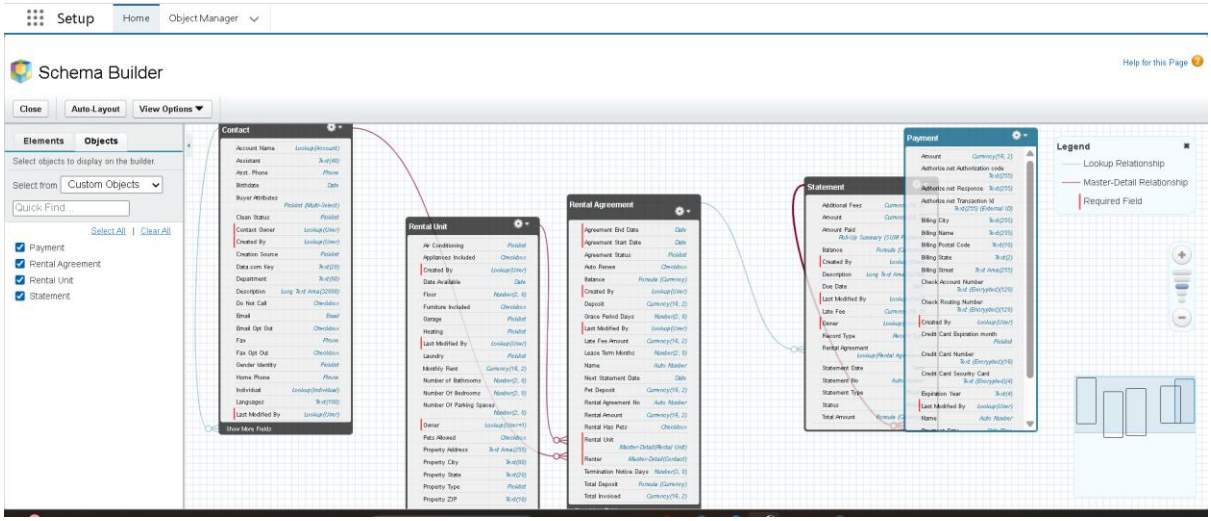


6. Compact Layouts

- **Rental_Unit__c Compact Layout**:
  - Created "Rental Unit Compact" with fields: Unit #, Number of Bedrooms, Number of Bathrooms, Total Square Feet.
- **Rental_Agreement__c Compact Layout**:
  - Created "Agreement Compact" with fields: Rental Unit, Renter, Rental Amount, Balance.
- **Payment__c Compact Layout**:
  - Created "Payment Compact" with fields: Amount, Status, Payment Date.
- **Statement__c Compact Layout**:
  - Created "Statement Compact" with fields: Total Amount, Due Date, Status.

7. Schema Builder

- The Schema Builder was used to visualize and confirm the relationships between objects:
  - Rental_Unit__c (Parent) → Rental_Agreement__c (Child) via Master-Detail.
  - Rental_Agreement__c (Parent) → Statement__c (Child) via Lookup.
  - Statement__c (Parent) → Payment__c (Child) via Master-Detail.
- The diagram ensures data integrity and reflects the hierarchical structure of the data model.



8. Lookup vs Master-Detail vs Hierarchical Relationships

- **Master-Detail Relationships**:
  - Rental_Agreement__c.Rental Unit (Master-Detail to Rental_Unit__c): Enforces data integrity, cascades deletes, and allows roll-up summaries.
  - Rental_Agreement__c.Renter (Master-Detail to Contact): Links to the standard Contact object for renter details.
  - Payment__c.Statement (Master-Detail to Statement__c): Ties payments to specific statements with deletion cascading.
- **Lookup Relationship**:
  - Statement__c.Rental Agreement (Lookup to Rental_Agreement__c): Allows flexibility, as statements can exist independently of agreements if needed, with no deletion cascade.
- **Hierarchical Relationships**:
  - Not implemented, as the model does not require user or role hierarchies (e.g., manager-subordinate relationships).

9. Junction Objects

- No junction objects were created in this phase, as the current model uses direct Master-Detail and Lookup relationships to manage one-to-many associations (e.g., one Rental_Unit__c to many Rental_Agreement__c). A junction object would be considered in future phases if many-to-many relationships (e.g., multiple renters per unit) are required.

10. External Objects

- No external objects were implemented, as the data model relies entirely on internal Salesforce objects. External objects could be added in future phases to integrate with

external systems (e.g., Authorize.net transaction data), but this is deferred to Phase 5 or later.

11. Testing & Validation

- **Validation**:
    - Created test records for Rental_Unit__c, Rental_Agreement__c, Statement__c, and Payment__c to verify field data entry and relationship behavior.
    - Confirmed roll-up summaries (Total Invoiced, Total Payments, Amount Paid) and formulas (Total Deposit, Balance, Total Amount) calculate correctly.
- **Testing**:
    - Tested page layouts and compact layouts in the UI to ensure all fields are visible and related lists function.
    - Verified Schema Builder reflects the intended relationships.

Insert Screenshot: Upload a screenshot of a sample Rental_Agreement__c record detail page showing related lists and field values. Place this screenshot after the "Testing" subsection.

12. Completion Checklist

- Custom Objects (Rental_Unit__c, Rental_Agreement__c, Payment__c, Statement__c) created.
- All fields defined and configured.
- Record Types (Not implemented, optional for future).
- Page Layouts customized.
- Compact Layouts created.
- Schema Builder used to visualize relationships.
- Relationships (Master-Detail, Lookup) implemented.
- Junction Objects (Not required in this phase).
- External Objects (Deferred to future phases).

13. Next Steps

- Proceed to **Phase 4: Process Automation** to implement Flows, Approval Processes, and Email Alerts.
- Consider adding Record Types or Junction Objects if business requirements evolve (e.g., multiple renters per unit).