

Phase 3: Data Modeling & Relationships

In Phase 3, we designed the **data model** of the Hospital Management System by creating custom objects and establishing relationships between them. This ensures that patients, doctors, appointments, and billing records are properly linked.

◆ Objects & Relationships Implemented

- **Patient__c → Appointment__c**

- 1 Patient can have multiple Appointments (1-to-Many).
- Implemented using a Lookup field (Patient__c) on **Appointment__c**.

Fields & Relationships					
FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Appointment Number	Appointment_Number__c	Text(20) (Unique Case Insensitive)		✓	▼
Contact Number	Contact_Number__c	Phone			▼
Created By	CreatedById	Lookup(User)			▼
Gender	Gender__c	Picklist			▼
Last Modified By	LastModifiedById	Lookup(User)			▼
Owner	OwnerId	Lookup(User,Group)		✓	▼
Patient Age	Patient_Age__c	Number(3, 0)			▼
Patient Name	Patient_Name__c	Text(50)			▼
Patients ID	Name	Auto Number		✓	▼

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- **Doctor__c → Appointment__c**

- 1 Doctor can handle multiple Appointments (1-to-Many).
- Implemented using a Lookup field (Doctor__c) on **Appointment__c**.

Fields & Relationships					
FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED	
Appointment Status	Appointment_Status__c	Picklist			▼
Created By	CreatedById	Lookup(User)			▼
Doctor	Doctor_Id__c	Auto Number			▼
Doctor Name	Doctor_Name__c	Text(50)			▼
Doctor Name	Name	Text(80)		✓	▼
Doctor Specialization	Doctor_Specialization__c	Picklist			▼
Last Modified By	LastModifiedById	Lookup(User)			▼
Mode of Payment	Mode_of_Payment__c	Picklist			▼
Owner	OwnerId	Lookup(User,Group)		✓	▼

- **Appointment__c → Billing__c**

- Each Appointment can have exactly 1 Billing record (1-to-1).
- Implemented using a Lookup field (Appointment__c) on **Billing__c**.
- Instead of a Validation Rule, a **Record-Triggered Flow** was used to check if a Billing already exists for the selected Appointment.

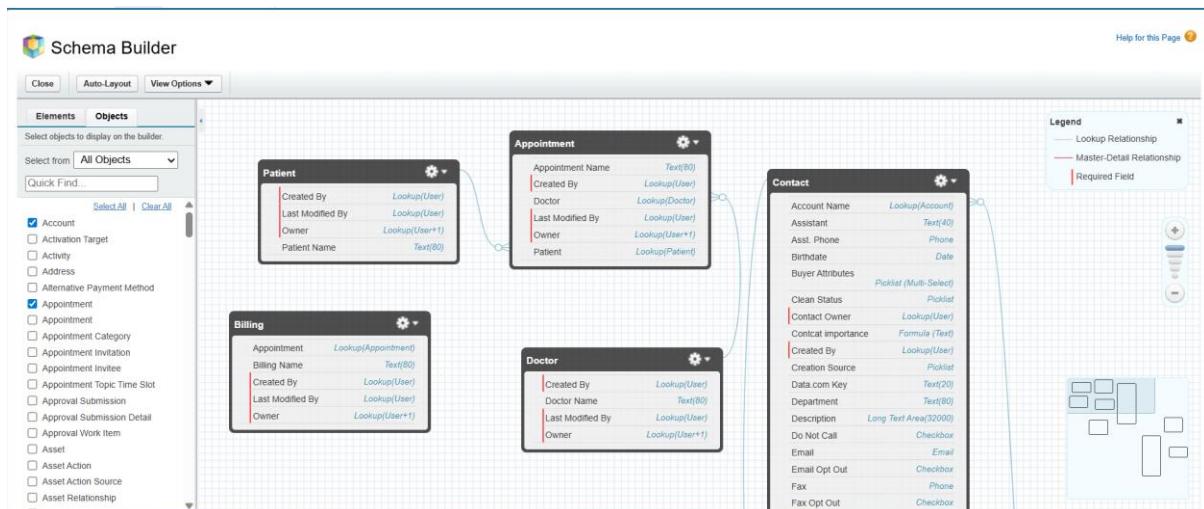
FIELD LABEL	FIELD NAME	DATA TYPE	CONTROLLING FIELD	INDEXED
Appointment Name	Appointment__c	Text(50)		
Appointment Number	Name	Auto Number		✓
Created By	CreatedById	Lookup(User)		
Doctor	Doctor__c	Lookup(Doctor)		✓
Last Modified By	LastModifiedById	Lookup(User)		
Owner	OwnerId	Lookup(User,Group)		✓
Patient	Patient__c	Lookup(Patient)		✓

◆ Schema Builder Verification

We used **Schema Builder** to visually confirm the relationships:

- Patient__c → Appointment__c (1:M)
- Doctor__c → Appointment__c (1:M)
- Appointment__c → Billing__c (1:1)

📸 Screenshots:

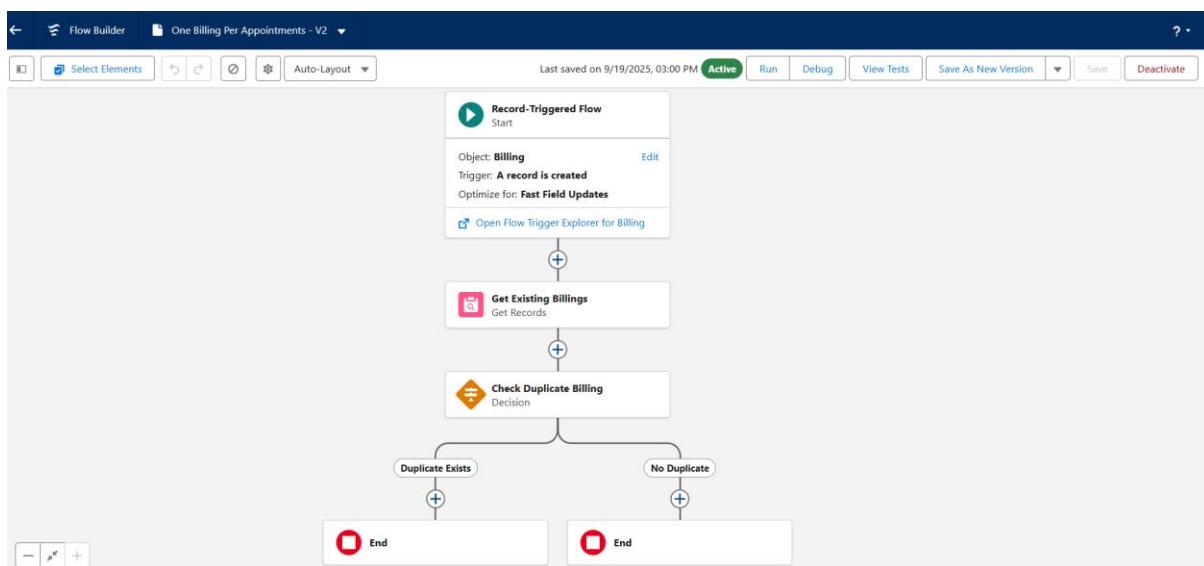


◆ Flow for Validation (Billing__c)

Flow Type: Record-Triggered Flow

- **Trigger:** When a Billing record is created.
- **Logic:**
 1. Query existing Billings for the same Appointment.
 2. If one exists → Display error and prevent save.

 **Screenshot :**



◆ Sample Test Data Created

We added sample records to validate the relationships:

- **2 Patients** (e.g., John Doe, Mary Jane).
- **2 Doctors** (e.g., Dr. Smith, Dr. Adams).
- **3 Appointments** linking Patients and Doctors.
- **3 Billings** linked to Appointments.
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 **Screenshot Placeholder:**

The image displays three separate screenshots of a hospital management system's web interface, each showing a list of items with various filters and controls.

Screenshot 1: Appointments

This screenshot shows the 'Appointments' module. The header includes 'Hospital-Patient-App...', 'Home', 'Billings', 'Medical Histories', 'Doctors', 'Patients', 'Appointments', 'Dashboards', 'Reports', 'Orders', 'Tasks', 'App Launcher', and 'More'. The main area shows a table of appointments with columns: Appoint..., Appointment..., Doctor, Patient, Record ID, Created By, Last Modified Date, and Created Date. A search bar at the top says 'Search...'. Below the table, it says '5 items • Sorted by Appointment Number • Updated 3 minutes ago'.

	Appoint...	Appointment...	Doctor	Patient	Record ID	Created By	Last Modified Date	Created Date
1	<input type="checkbox"/> A-0001				a06gl.000000BsheLQAR	Shakir Jasmin	9/18/2025, 7:46 AM	9/18/2025, 7:46 AM
2	<input type="checkbox"/> A-0002				a06gl.000000BszuzICAB	Jasmin Doctor s	9/18/2025, 10:26 AM	9/18/2025, 10:26 AM
3	<input type="checkbox"/> A-0003	jasmin	D-0003	P-0005	a06gl.000000BuNzTQAN	Shakir Jasmin	9/19/2025, 3:18 AM	9/19/2025, 3:18 AM
4	<input type="checkbox"/> A-0004	jasmin	D-0003	P-0003	a06gl.000000BuO7lQAF	Shakir Jasmin	9/19/2025, 3:23 AM	9/19/2025, 3:23 AM
5	<input type="checkbox"/> A-0005	lisaa	D-0003	P-0008	a06gl.000000BurW9QAZ	Shakir Jasmin	9/19/2025, 9:18 AM	9/19/2025, 9:18 AM

Screenshot 2: Patients

This screenshot shows the 'Patients' module. The header is identical to the first one. The main area shows a table of patients with columns: Patients ID, Patient Name, Patient Age, Gender, Appointment Num..., Contact Number, and Created Date. A search bar at the top says 'Search...'. Below the table, it says '11 items • Sorted by Patients ID • Updated a few seconds ago'.

	Patients ID	Patient Name	Patient Age	Gender	Appointment Num...	Contact Number	Created Date
1	<input type="checkbox"/> P-0001						9/18/2025, 7:44 AM
2	<input type="checkbox"/> P-0002						9/18/2025, 7:45 AM
3	<input type="checkbox"/> P-0003	Priyanka	23	FEMALE	12301	(203) 725-3472	9/18/2025, 8:54 AM
4	<input type="checkbox"/> P-0004	Iulia	20	FEMALE	1282	(128) 262-7627	9/18/2025, 10:29 AM
5	<input type="checkbox"/> P-0005	John Doe	25	MALE	123	(183) 673-5722	9/19/2025, 3:09 AM
6	<input type="checkbox"/> P-0006	Mary Jane	28	FEMALE	176	(176) 276-2622	9/19/2025, 3:10 AM
7	<input type="checkbox"/> P-0008	Jonys	23	MALE	123343		9/19/2025, 4:01 AM
8	<input type="checkbox"/> P-0009	Janiffer	32	FEMALE	1238	(120) 936-3863	9/19/2025, 8:50 AM
9	<input type="checkbox"/> P-0010	chinichom	27	MALE	108	(108) 363-5622	9/19/2025, 8:51 AM
10	<input type="checkbox"/> P-0012	Priyanka	25	FEMALE	12399	(108) 363-5620	9/19/2025, 9:07 AM
11	<input type="checkbox"/> P-0013	Iulia	21	FEMALE	97889	(187) 672-5252	9/19/2025, 9:17 AM

Screenshot 3: Billings

This screenshot shows the 'Billings' module. The header is identical to the first one. The main area shows a table of billings with columns: Billing Number, Appointment, Amount, Payment Status, and Billing Date. A search bar at the top says 'Search...'. Below the table, it says '3 items • Sorted by Billing Number • Updated a few seconds ago'. A 'List View Controls' button is highlighted with a red box.

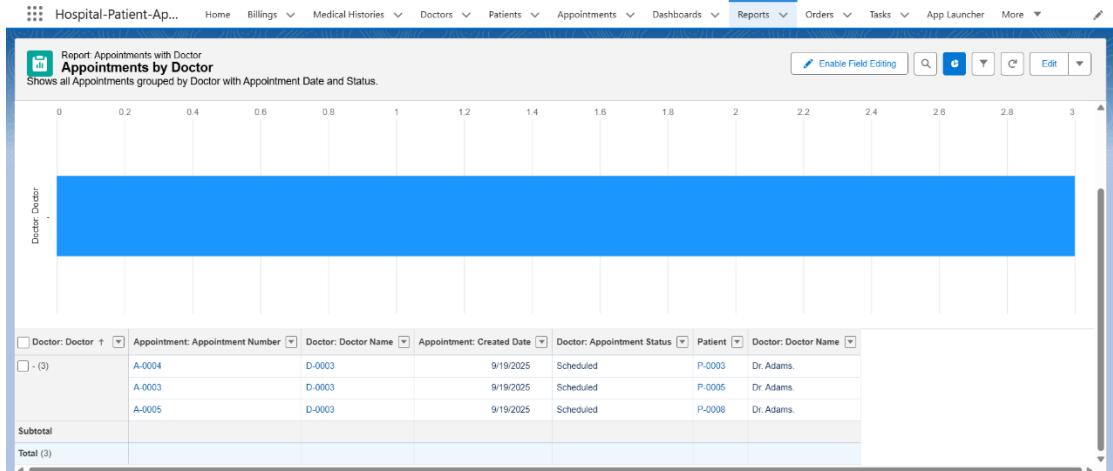
	Billing Number	Appointment	Amount	Payment Status	Billing Date
1	<input type="checkbox"/> B-0001				
2	<input type="checkbox"/> B-0002				
3	<input type="checkbox"/> B-0003	A-0004	\$1,200.00	Pending	9/30/2025

◆ Reports for Testing

To confirm the model works correctly, the following reports were created:

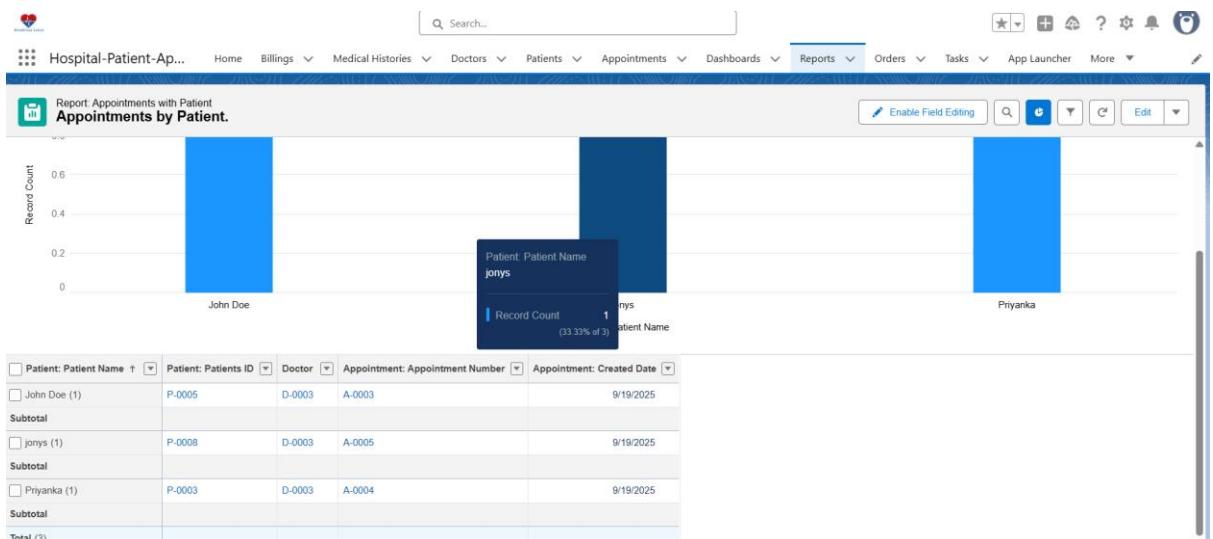
1. Appointments by Doctor → grouped by Doctor.

Screenshot: Report output showing doctors with their appointments.



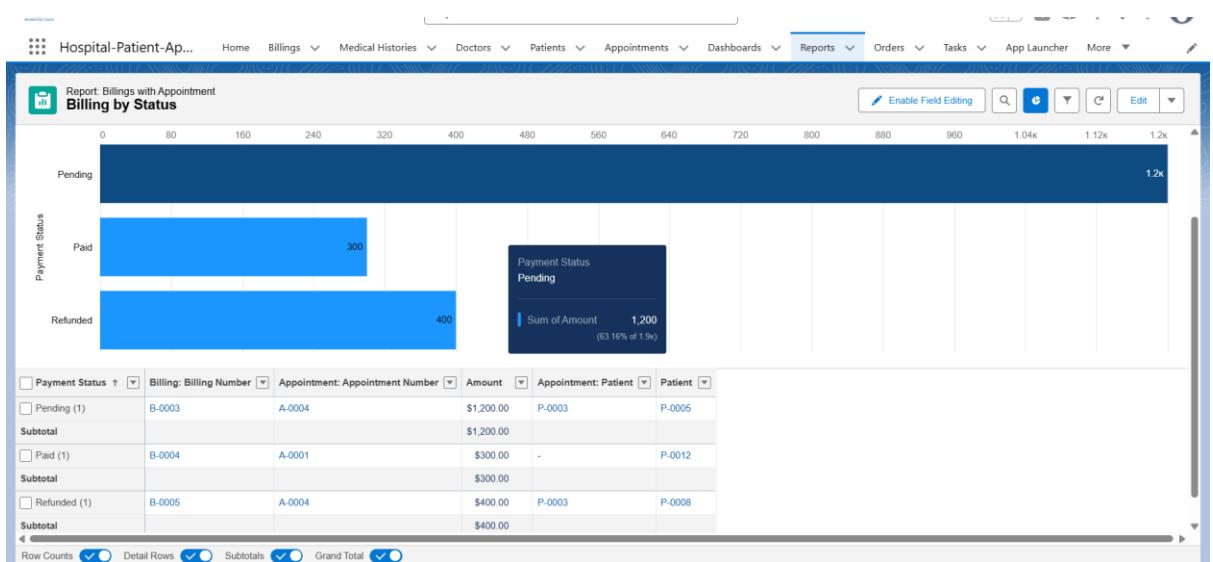
3. Appointments by Patient → grouped by Patient.

Screenshot: Report output showing patients with their appointments.



5. Billing by Status → grouped by Payment Status.

Screenshot: Report output showing billing amounts per status.



Outcome of Phase 3

- Relationships between **Patients, Doctors, Appointments, and Billing** are successfully implemented.
- **Flow automation** enforces strict **1-to-1 Appointment ↔ Billing**.
- Schema Builder and Reports confirm the model works as expected.
- Dashboard foundation is ready for Phase 4 automation.