CS306 Project Phase 2

Patient and owe bill tables

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    ○ CREATE TABLE Patients(
      p_id INT,
      gender varchar(1),
      p_name varchar(50),
       contact varchar(50),
      bday DATE,
      primary key (p_id)
  );

    ○ CREATE TABLE owe_bill(
      bill id INT,
      p_id INT,
      charges INT,
      date DATE,
      primary key (bill_id),
       Foreign Key (p_id) References Patients(p_id)
  );
```

For the Patient table:

- p_id -> {gender, p_name, contact, bday}
- There are no partial dependencies.
- This table is already in BCNF.

For the owe bill table:

- bill_id -> {p_id, charges, date}
- There are no partial dependencies.
- This table is already in BCNF.

INSERTED DATAS

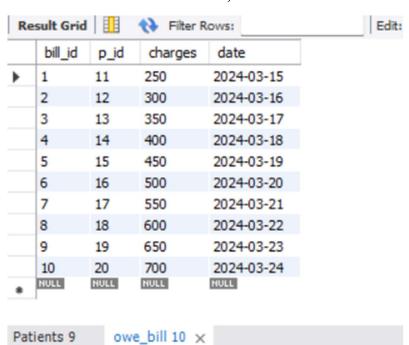
```
INSERT INTO Patients VALUES (11, 'M', 'David Johnson', '5551111111', '1990-04-15');
INSERT INTO Patients VALUES (12, 'F', 'Sophie Brown', '5552222222', '1986-09-22');
INSERT INTO Patients VALUES (13, 'M', 'James Smith', '5553333333', '1977-11-03');
INSERT INTO Patients VALUES (14, 'F', 'Chloe Davis', '5554444444', '1972-03-14');
INSERT INTO Patients VALUES (15, 'M', 'Benjamin Wilson', '555555555', '1958-08-25');
INSERT INTO Patients VALUES (16, 'F', 'Isabella Martinez', '5556666666', '1989-05-18');
INSERT INTO Patients VALUES (17, 'M', 'Alexander Anderson', '5557777777', '1998-10-09');
INSERT INTO Patients VALUES (18, 'F', 'Mia Taylor', '5558888888', '1966-07-30');
INSERT INTO Patients VALUES (19, 'M', 'Ethan Thomas', '5559999999', '1974-02-15');
INSERT INTO Patients VALUES (20, 'F', 'Amelia Johnson', '5551010101', '1991-06-07');
INSERT INTO owe bill VALUES (1, 11, 250, '2024-03-15');
INSERT INTO owe bill VALUES (2, 12, 300, '2024-03-16');
INSERT INTO owe bill VALUES (3, 13, 350, '2024-03-17');
INSERT INTO owe bill VALUES (4, 14, 400, '2024-03-18');
INSERT INTO owe bill VALUES (5, 15, 450, '2024-03-19');
INSERT INTO owe bill VALUES (6, 16, 500, '2024-03-20');
INSERT INTO owe bill VALUES (7, 17, 550, '2024-03-21');
INSERT INTO owe bill VALUES (8, 18, 600, '2024-03-22');
INSERT INTO owe bill VALUES (9, 19, 650, '2024-03-23');
INSERT INTO owe bill VALUES (10, 20, 700, '2024-03-24');
```

SELECT * FROM owe_bill;

	p_id	gender	p_name	contact	bday
•	11	M	David Johnson	5551111111	1990-04-15
	12	F	Sophie Brown	5552222222	1986-09-22
	13	M	James Smith	5553333333	1977-11-03
	14	F	Chloe Davis	5554444444	1972-03-14
	15	M	Benjamin Wilson	555555555	1958-08-25
	16	F	Isabella Martinez	5556666666	1989-05-18
	17	M	Alexander Anderson	5557777777	1998-10-09
	18	F	Mia Taylor	5558888888	1966-07-30
	19	M	Ethan Thomas	5559999999	1974-02-15
	20	F	Amelia Johnson	5551010101	1991-06-07
	NULL	NULL	NULL	NULL	NULL
	-1				

Patients 9 × owe_bill 10

SELECT * FROM Patients;



Query Definiton and Relational Algebra Equivalent

English Query: Retrieve patient information along with their corresponding bill details.

Relational Algebra: $\pi(p_id, p_name, charges, date (\sigma_Patients.p_id = Bill.p_id (Patients \bowtie Bill)))$

Query in MYSQL

SQL Code:

SELECT Patients.p_id, Patients.p_name, owe_bill.charges, owe_bill.date

FROM Patients

JOIN owe_bill ON Patients.p_id = owe_bill.p_id;

Table Query

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	p_id	p_name	charges	date				
•	11	David Johnson	250	2024-03-1	15			
	12	Sophie Brown	300	2024-03-1	16			
	13	James Smith	350	2024-03-1	17			
	14	Chloe Davis	400	2024-03-1	18			
	15	Benjamin Wilson	450	2024-03-1	19			
	16	Isabella Martinez	500	2024-03-2	20			
	17	Alexander Anderson	550	2024-03-2	21			
	18	Mia Taylor	600	2024-03-2	22			
	19	Ethan Thomas	650	2024-03-2	23			
	20	Amelia Johnson	700	2024-03-2	24			

Result 11 ×

GroupBy Operation

MYSQL code:

SELECT Patients.p_id, Patients.p_name, SUM(owe_bill.charges) AS total_charges

FROM Patients

JOIN owe bill ON Patients.p id = owe bill.p id

GROUP BY Patients.p_id, Patients.p_name;

GroupBy Table:

	p_id	p_name	charges	date
•	11	David Johnson	250	2024-03-15
	12	Sophie Brown	300	2024-03-16
	13	James Smith	350	2024-03-17
	14	Chloe Davis	400	2024-03-18
	15	Benjamin Wilson	450	2024-03-19
	16	Isabella Martinez	500	2024-03-20
	17	Alexander Anderson	550	2024-03-21
	18	Mia Taylor	600	2024-03-22
	19	Ethan Thomas	650	2024-03-23
	20	Amelia Johnson	700	2024-03-24

Alter Table Constraint

Code:

ALTER TABLE owe_bill ADD CONSTRAINT check_charges CHECK (charges >= 0); INSERT INTO owe_bill VALUES (1, 11, -250, '2024-03-15');

Error:

