PROJECT 1 PRESENTATION

Link to the Google Slides (for authors)

Note: the hidden slides represent the presentation outline provided by instructor (“guidelines”)

Project 1
ITIS 6120

Kelsey Kornegay, Matt Barksdale, Stephanie Karp, Will Lapinel

- What is your database about? Articulate the database

Ophthalmology Database

Our database is designed to support the operations and administration of a hypothetical ophthalmology practice

Patients

Insert ER and UML diagram

```
patient_id INT AUTO_INCREMENT PRIMARY KEY,
full_name TEXT NOT NULL,
date_of_birth DATE NOT NULL,
address TEXT NOT NULL,
gender VARCHAR(255) NOT NULL,
insurance_provider text not null,
contact_number VARCHAR(255) NOT NULL
```

Providers

Insert ER and UML diagram


```
provider_id INT AUTO_INCREMENT PRIMARY KEY,
full_name TEXT NOT NULL,
specialty VARCHAR(255) NOT NULL,
contact_number VARCHAR(255) NOT NULL,
room_number VARCHAR(255) NOT NULL
```

Facilities

Insert ER and UML diagram

```
facility_id INT AUTO_INCREMENT PRIMARY KEY,
facility_name VARCHAR(255) NOT NULL,
address text NOT NULL
```

Appointments

Insert ER and UML diagram

```
appointment_id INT AUTO_INCREMENT PRIMARY KEY,
patient_id INT NOT NULL,
provider_id INT NOT NULL,
facility_id INT NOT NULL,
appointment_date DATE NOT NULL,
appointment_time TIME NOT NULL,
foreign key (facility_id) references facilities(facility_id),
FOREIGN KEY (patient_id) REFERENCES patients(patient_id),
FOREIGN KEY (provider_id) REFERENCES providers(provider_id)
```

Medical Records

Insert ER and UML diagram

```
record_id INT AUTO_INCREMENT PRIMARY KEY,
patient_id INT NOT NULL,
provider_id INT NOT NULL,
visit_id INT NOT NULL,
facility_id INT NOT NULL,
discharge_date DATE NOT NULL,
symptoms TEXT,
diagnosis VARCHAR(255),
treatment_plan TEXT,
foreign key (facility_id) references facilities(facility_id),
FOREIGN KEY (patient_id) REFERENCES patients(patient_id)
FOREIGN KEY (provider_id) REFERENCES providers(provider_id)
FOREIGN KEY (visit_id) REFERENCES visits(visit_id)
```

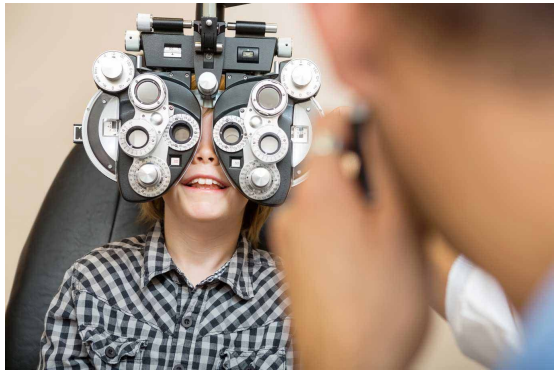
Prescriptions

Insert ER and UML diagram

```
prescription_id INT AUTO_INCREMENT PRIMARY KEY,
record_id INT NOT NULL,
medication VARCHAR(255) NOT NULL,
dosage VARCHAR(255) NOT NULL,
instructions TEXT NOT NULL,
FOREIGN KEY (record_id) REFERENCES medical_records(record_id)
```

Vision Tests

Insert ER and UML diagram



```
test_id INT AUTO_INCREMENT PRIMARY KEY,
record_id INT NOT NULL,
test_type VARCHAR(255) NOT NULL,
test_date DATE NOT NULL,
result VARCHAR(255) NOT NULL,
FOREIGN KEY (record_id) REFERENCES medical_records(record_id)
```

Equipment

```
equipment_id INT AUTO_INCREMENT PRIMARY KEY,
equipment_name VARCHAR(255) NOT NULL,
purchase_date DATE NOT NULL,
room_number VARCHAR(255) NOT NULL,
status VARCHAR(255) NOT NULL
facility_id INT NOT NULL,
FOREIGN KEY (facility_id) REFERENCES facilities(facility_id)
```

Inventory

Insert ER and UML diagram


```
inventory_id INT AUTO_INCREMENT PRIMARY KEY,
item_name VARCHAR(255) NOT NULL,
quantity INT NOT NULL,
reorder_level INT NOT NULL,
last_ordered_date DATE NOT NULL
```

Staff

Insert ER and UML diagram

```
staff_id INT AUTO_INCREMENT PRIMARY KEY,
full_name VARCHAR(255) NOT NULL,
role VARCHAR(255) NOT NULL,
contact_number VARCHAR(255) NOT NULL,
schedule VARCHAR(255) NOT NULL
```

Prove tables are in BCNF form

All tables are in BCNF

Boyce-Codd Normal Form (BCNF) requires that each table has a primary key (or a composite primary key in the case of linked tables), and all attributes are fully functionally dependent on their respective primary key.

There are no partial dependencies or transitive dependencies that would violate the rules of BCNF.

All tables are in BCNF.

- What information can be obtained?

Supporting queries

A sample of the many queries that would be needed to support operations.

The data in these queries is fictitious.

Supporting Query 1

Spec A: Should allow users to enter patient demographic information (including address and insurance)

INSERT INTO patients (full_name, date_of_birth, address, gender, insurance_provider, contact_number)

VALUES ('Alice Johnson', '1990-05-15', '123 Main St, Springfield', 'female', 'HealthPlus Insurances', '555-0201');

Supporting Query 2

Spec B: Should allow users to enter provider information (including specialty)

```
INSERT INTO providers (full_name, specialty, contact_number, room_number)
VALUES ('Dr. Sarah Lee', 'Oncology', '555-0301', '201');
```

Supporting Query 3 and 4

Spec C: Should allow users to enter visit information (including time and facility)

3. Appointments:

INSERT INTO appointments (patient_id, provider_id, facility_id, appointment_date, appointment_time)

VALUES (1, 1, 1, '2024-03-01', '09:00:00');

4. Visits and medical record information:

INSERT INTO medical_records (patient_id, provider_id, visit_id, facility_id, discharge_date, symptoms, diagnosis, treatment_plan)

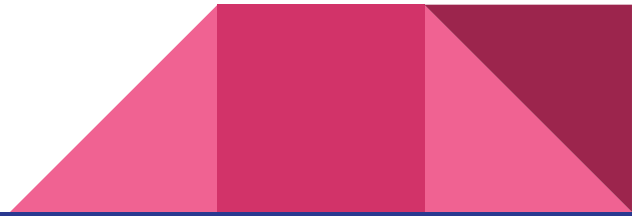
VALUES (1, 3, 2, 1, '2024-03-02', 'Cough and fever', 'Common Cold', 'Rest');

Note on Spec D:

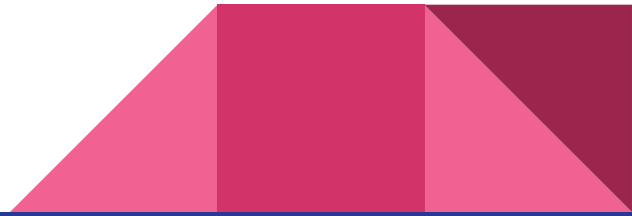
Spec D: should allow users to enter clinical care information (including recording of signs and symptoms, discharge diagnosis and prescriptions, and orders and results of exams, tests, and procedures)

This spec is satisfied by Query 4.

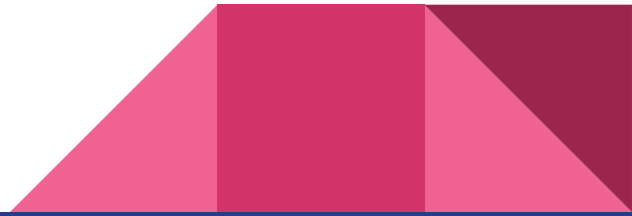
Supporting Query 5



Supporting Query 6



Supporting Query 7

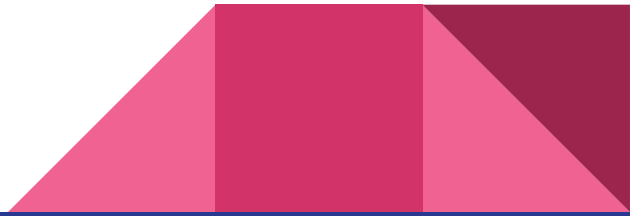


Supporting Query 8

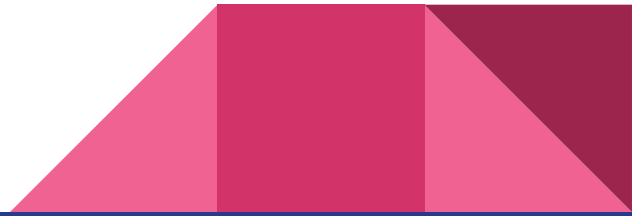
Supporting Query 9

Supporting Query 10

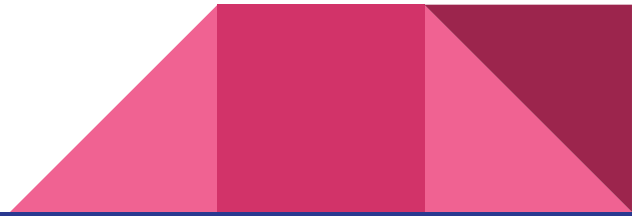
Supporting Query 11



Supporting Query 12

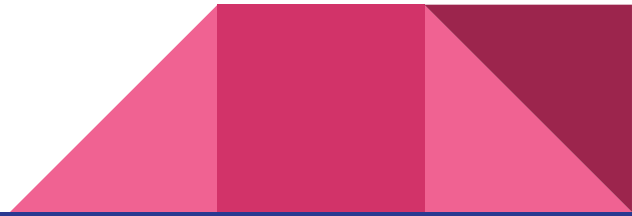


Supporting Query 13

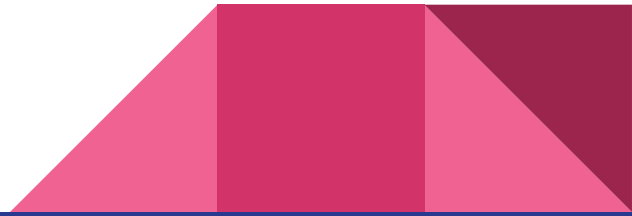


Supporting Query 14

Supporting Query 15



Supporting Query 16



- Explain UML data model (can be incorporated with the explaining the database)

- Explain ER diagram (no need to spend too much time on this part)

Show database and test data in SQL (it’s okay to not spend too much on this part)

Supporting functionalities