**SQL Schema:**

CREATE TABLE Region (

region\_id INT PRIMARY KEY,

region\_name VARCHAR(100),

population INT,

healthcare\_needs\_level VARCHAR(50)

);

CREATE TABLE Healthcare\_Facilities (

facility\_id INT PRIMARY KEY,

facility\_name VARCHAR(100),

facility\_type VARCHAR(50),

location\_id INT,

capacity INT,

available\_resources VARCHAR(255),

FOREIGN KEY (location\_id) REFERENCES Region(region\_id)

);

CREATE TABLE Healthcare\_Staff (

staff\_id INT PRIMARY KEY,

staff\_name VARCHAR(100),

qualification VARCHAR(50),

specialty VARCHAR(50),

facility\_id INT,

FOREIGN KEY (facility\_id) REFERENCES Healthcare\_Facilities(facility\_id)

);

CREATE TABLE Health\_Services (

service\_id INT PRIMARY KEY,

service\_name VARCHAR(100),

availability VARCHAR(50),

cost DECIMAL(10, 2),

facility\_id INT,

FOREIGN KEY (facility\_id) REFERENCES Healthcare\_Facilities(facility\_id)

);

CREATE TABLE Patients (

patient\_id INT PRIMARY KEY,

patient\_name VARCHAR(100),

age INT,

gender VARCHAR(10),

health\_status VARCHAR(255),

region\_id INT,

facility\_id INT,

FOREIGN KEY (region\_id) REFERENCES Region(region\_id),

FOREIGN KEY (facility\_id) REFERENCES Healthcare\_Facilities(facility\_id)

);

**Data:**

-- Insert data into Region

INSERT INTO Region (region\_id, region\_name, population, healthcare\_needs\_level)

VALUES

(1, 'Rural Region A', 50000, 'High'),

(2, 'Rural Region B', 30000, 'Medium'),

(3, 'Urban Region C', 200000, 'Low');

-- Insert data into Healthcare\_Facilities

INSERT INTO Healthcare\_Facilities (facility\_id, facility\_name, facility\_type, location\_id, capacity, available\_resources)

VALUES

(1, 'Clinic A', 'Clinic', 1, 50, 'Basic'),

(2, 'Hospital B', 'Hospital', 2, 150, 'Advanced'),

(3, 'Health Post C', 'Health Post', 3, 20, 'Minimal');

-- Insert data into Healthcare\_Staff

INSERT INTO Healthcare\_Staff (staff\_id, staff\_name, qualification, specialty, facility\_id)

VALUES

(1, 'Dr. John Doe', 'MD', 'General', 1),

(2, 'Nurse Jane Smith', 'RN', 'Pediatrics', 2),

(3, 'Dr. Alice Brown', 'MD', 'OBGYN', 3);

-- Insert data into Health\_Services

INSERT INTO Health\_Services (service\_id, service\_name, availability, cost, facility\_id)

VALUES

(1, 'General Checkup', 'Available', 20.00, 1),

(2, 'Maternity Services', 'Limited', 100.00, 2),

(3, 'Vaccination', 'Available', 10.00, 3);

-- Insert data into Patients

INSERT INTO Patients (patient\_id, patient\_name, age, gender, health\_status, region\_id, facility\_id)

VALUES

(1, 'Patient A', 25, 'Female', 'Healthy', 1, 1),

(2, 'Patient B', 60, 'Male', 'Chronic Illness', 2, 2),

(3, 'Patient C', 4, 'Female', 'Healthy', 3, 3);

**Part 3: SQL Programming**

**Data Retrieval Queries:**

-- Retrieve all healthcare facilities in rural areas

SELECT hf.facility\_name, r.region\_name, hf.facility\_type, hf.capacity

FROM Healthcare\_Facilities hf

JOIN Region r ON hf.location\_id = r.region\_id

WHERE r.healthcare\_needs\_level = 'High' OR r.healthcare\_needs\_level = 'Medium';

-- Retrieve the number of healthcare staff per facility

SELECT hf.facility\_name, COUNT(hs.staff\_id) AS staff\_count

FROM Healthcare\_Facilities hf

JOIN Healthcare\_Staff hs ON hf.facility\_id = hs.facility\_id

GROUP BY hf.facility\_name;

-- Analyze the distribution of healthcare services and their availability

SELECT hs.service\_name, COUNT(hs.service\_id) AS service\_count, hs.availability

FROM Health\_Services hs

GROUP BY hs.service\_name, hs.availability;

**Data Analysis Queries:**

-- Identify regions with the highest healthcare needs but the least healthcare facilities

SELECT r.region\_name, COUNT(hf.facility\_id) AS facility\_count, r.healthcare\_needs\_level

FROM Region r

LEFT JOIN Healthcare\_Facilities hf ON r.region\_id = hf.location\_id

WHERE r.healthcare\_needs\_level = 'High'

GROUP BY r.region\_name, r.healthcare\_needs\_level

ORDER BY facility\_count ASC;

-- Determine the average cost of healthcare services in each facility

SELECT hf.facility\_name, AVG(hs.cost) AS average\_service\_cost

FROM Healthcare\_Facilities hf

JOIN Health\_Services hs ON hf.facility\_id = hs.facility\_id

GROUP BY hf.facility\_name;