WORLD HEALTHCARE ORGANSIATION

Introduction:

Database System: World Health Organization (WHO)

The **World Health Organization (WHO)** is a global health agency that plays a crucial role in promoting international public health, monitoring diseases, managing healthcare resources, and coordinating health programs across different countries. To handle such a wide scope of operations, it requires a well-structured and efficient **database management system**.

This project is designed to create a **comprehensive WHO database** that can store, manage, and analyze large amounts of health-related data. The database contains **25 interconnected tables**, each covering key areas such as:

- **Member Countries** – Information about nations associated with WHO.
- **Hospitals & Clinics** – Healthcare facilities, their services, and capacities.
- **Doctors & Staff** – Medical professionals and their specialties.
- **Diseases & Research** – Global disease data, ongoing studies, and medical research projects.
- **Patients & Cases** – Individual patient records, treatments, and recovery details.
- **Vaccination & Campaigns** – Immunization programs and worldwide health initiatives.
- **Funding & Resources** – Financial support, budgets, and resources allocated for health missions.

By combining these tables with **primary keys, foreign keys, constraints, and validations**, the system ensures **data accuracy, consistency, and reliability**.

Real-World Application

This database can be used by the WHO to:

- Track and analyze the **spread of diseases** across countries.
- Manage and allocate **healthcare resources** effectively.
- Maintain detailed **records of doctors, hospitals, and patients** globally.
- Monitor the success of **vaccination drives and health campaigns**.
- Support **research and policy-making** for global health improvement.

Purpose of the Project

The goal of this project is to design a **robust WHO database system** that demonstrates:

- **Efficient database design** with 25 tables and constraints.
- **Logical data connections** using primary and foreign keys.
- **Realistic sample records** for practical use cases.
- **Execution of SQL queries** (DDL, DML, DQL) to showcase data handling and reporting.

DATABASE DESIGN :

1.PATIENT TABLE:

```sql
CREATE TABLE Patients (

    patient_id INT PRIMARY KEY,

    name VARCHAR(100) NOT NULL,

    age INT,

    gender VARCHAR(10),

    contact_number VARCHAR(15),

    city VARCHAR(50)

);
```

2,DOCTORS TABLE:

```sql
CREATE TABLE Doctors (

    doctor_id INT PRIMARY KEY,

    name VARCHAR(100) NOT NULL,

    specialization VARCHAR(50),

    contact_number VARCHAR(15),

    department VARCHAR(50)

);
```

3.APPOINTMENT TABLE;

```sql
CREATE TABLE Appointments (

    appointment_id INT PRIMARY KEY,

    patient_id INT,

    doctor_id INT,

    appointment_date  DATE);
```

25-tables of database & queries:

```sql
create database PROJECTS;

use PROJECTS;


-- 1. Countries

CREATE TABLE countries (

    country_id INT PRIMARY KEY,

    country_name VARCHAR(100) NOT NULL,

    continent VARCHAR(50),

    population BIGINT,

    gdp_per_capita DECIMAL(12,2),

    literacy_rate DECIMAL(5,2),

    life_expectancy DECIMAL(5,2),

    health_budget DECIMAL(15,2),

    capital_city VARCHAR(100),

    official_language VARCHAR(50)

);

INSERT INTO countries (

    country_id, country_name, continent, population, gdp_per_capita,
literacy_rate, life_expectancy, health_budget, capital_city, official_language

) VALUES
```

(1, 'India', 'Asia', 1428600000, 2500.50, 77.70, 69.40, 95000000000.00, 'New Delhi', 'Hindi'),

(2, 'United States', 'North America', 334000000, 74000.20, 99.00, 79.10, 450000000000.00, 'Washington D.C.', 'English'),

(3, 'China', 'Asia', 1412000000, 12600.70, 96.80, 77.30, 320000000000.00, 'Beijing', 'Mandarin'),

(4, 'Brazil', 'South America', 214000000, 9700.90, 93.20, 75.40, 68000000000.00, 'Brasília', 'Portuguese'),

(5, 'Nigeria', 'Africa', 223800000, 2300.30, 62.00, 54.30, 12000000000.00, 'Abuja', 'English'),

(6, 'Germany', 'Europe', 84000000, 50200.60, 99.00, 81.10, 160000000000.00, 'Berlin', 'German'),

(7, 'Japan', 'Asia', 125000000, 42000.50, 99.00, 84.50, 180000000000.00, 'Tokyo', 'Japanese'),

(8, 'Australia', 'Oceania', 26000000, 62000.80, 99.00, 83.40, 90000000000.00, 'Canberra', 'English'),

(9, 'South Africa', 'Africa', 60500000, 6800.40, 95.30, 65.80, 22000000000.00, 'Pretoria', 'English'),

(10, 'France', 'Europe', 67000000, 46500.75, 99.00, 82.30, 150000000000.00, 'Paris', 'French');

#queries:

SELECT * FROM countries;

SELECT country_name,population FROM countries WHERE continent='Asia';

SELECT country_name,gdp_per_capita FROM countries ORDER BY gdp_per_capita DESC LIMIT 5;

```sql
SELECT continent,AVG(life_expectancy) AS avg_life FROM countries GROUP BY
continent;

UPDATE countries SET health_budget=health_budget+1000000000 WHERE
country_name='India';

DELETE FROM countries WHERE country_name='Nigeria';

ALTER TABLE hospitals ADD COLUMN rating DECIMAL(3,1) DEFAULT 4.5;

SELECT hospital_name,capacity FROM hospitals WHERE capacity>1500;

drop table countries;
```

#===

-- 2. Hospitals
```sql
CREATE TABLE hospitals (
    hospital_id INT PRIMARY KEY,
    hospital_name VARCHAR(150) NOT NULL,
    country_id INT,
    city VARCHAR(100),
    capacity INT,
    specialization VARCHAR(100),
    established_year INT,
    director_name VARCHAR(100),
    phone VARCHAR(20),
```

```sql
    email VARCHAR(100),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);

INSERT INTO hospitals (

    hospital_id, hospital_name, country_id, city, capacity,

    specialization, established_year, director_name, phone, email

) VALUES

(1, 'All India Institute of Medical Sciences', 1, 'New Delhi', 3000, 'General',
1956, 'Dr. Randeep Guleria', '+91-11-26588500', 'aiims@india.gov.in'),

(2, 'Mayo Clinic', 2, 'Rochester', 2000, 'Multispecialty', 1889, 'Dr. Gianrico
Farrugia', '+1-507-284-2511', 'contact@mayo.edu'),

(3, 'Peking Union Medical College Hospital', 3, 'Beijing', 1500, 'General', 1921,
'Dr. Li Ning', '+86-10-6529-5261', 'pumch@china.cn'),

(4, 'Hospital Israelita Albert Einstein', 4, 'São Paulo', 1200, 'General', 1955, 'Dr.
Sidney Klajner', '+55-11-2151-1233', 'contact@einstein.br'),

(5, 'University College Hospital', 5, 'Ibadan', 1000, 'General', 1957, 'Dr. Jesse
Otegbayo', '+234-2-2411690', 'uch@ng.org'),

(6, 'Charité – Universitätsmedizin', 6, 'Berlin', 3000, 'Research & General', 1710,
'Prof. Heyo Kroemer', '+49-30-450-50', 'contact@charite.de'),

(7, 'Tokyo University Hospital', 7, 'Tokyo', 1500, 'General', 1858, 'Dr. Naoto
Uemura', '+81-3-3815-5411', 'tokyohosp@jp.jp'),

(8, 'Royal Prince Alfred Hospital', 8, 'Sydney', 1000, 'General', 1882, 'Dr. Teresa
Anderson', '+61-2-9515-6111', 'rpa@health.nsw.gov.au'),

(9, 'Groote Schuur Hospital', 9, 'Cape Town', 1000, 'Trauma & General', 1938,
'Dr. Bhavna Patel', '+27-21-404-9111', 'gsh@health.gov.za'),

(10, 'Hôpital de la Pitié-Salpêtrière', 10, 'Paris', 1600, 'General', 1656, 'Prof.
Olivier Lyon-Caen', '+33-1-42-16-00-00', 'hopital@aphp.fr');
```

```
#queies:

select * from hospitals;

SELECT hospital_name,city FROM hospitals WHERE capacity>1500;

SELECT hospital_name,established_year FROM hospitals ORDER BY
established_year ASC LIMIT 5;

SELECT specialization,COUNT(*) AS total FROM hospitals GROUP BY
specialization;

UPDATE hospitals SET capacity=capacity+200 WHERE hospital_id=1;

DELETE FROM hospitals WHERE hospital_name='University College Hospital';

ALTER TABLE hospitals ADD COLUMN accreditation VARCHAR(50) DEFAULT
'WHO Certified';

SELECT country_id,AVG(capacity) AS avg_capacity FROM hospitals GROUP BY
country_id HAVING AVG(capacity)>1500;

SELECT hospital_name,director_name FROM hospitals WHERE city LIKE 'B%';

SELECT COUNT(*) FROM hospitals WHERE specialization='General';
```

```
#==============================================================
==============================================================
=========

-- 3. Doctors

CREATE TABLE doctors (

    doctor_id INT PRIMARY KEY,

    first_name VARCHAR(50),
```

```sql
    last_name VARCHAR(50),

    gender CHAR(1) CHECK (gender IN ('M', 'F')),

    specialty VARCHAR(100),

    hospital_id INT,

    experience_years INT,

    phone VARCHAR(20),

    email VARCHAR(100),

    salary DECIMAL(12,2),

    FOREIGN KEY (hospital_id) REFERENCES hospitals(hospital_id)
);
INSERT INTO doctors (
    doctor_id, first_name, last_name, gender, specialty, hospital_id,
    experience_years, phone, email, salary
)
VALUES
(1, 'John', 'Smith', 'M', 'Cardiology', 1, 15, '9876543210',
'john.smith@example.com', 150000.00),
(2, 'Emily', 'Johnson', 'F', 'Neurology', 2, 10, '9876543211',
'emily.johnson@example.com', 140000.00),
(3, 'Michael', 'Brown', 'M', 'Pediatrics', 3, 8, '9876543212',
'michael.brown@example.com', 120000.00),
(4, 'Sophia', 'Davis', 'F', 'Oncology', 4, 12, '9876543213',
'sophia.davis@example.com', 145000.00),
(5, 'Daniel', 'Wilson', 'M', 'Orthopedics', 5, 20, '9876543214',
'daniel.wilson@example.com', 160000.00),
```

(6, 'Olivia', 'Martinez', 'F', 'Dermatology', 1, 7, '9876543215', 'olivia.martinez@example.com', 110000.00),

(7, 'James', 'Garcia', 'M', 'General Surgery', 2, 18, '9876543216', 'james.garcia@example.com', 155000.00),

(8, 'Ava', 'Rodriguez', 'F', 'Gynecology', 3, 11, '9876543217', 'ava.rodriguez@example.com', 135000.00),

(9, 'William', 'Lee', 'M', 'Psychiatry', 4, 9, '9876543218', 'william.lee@example.com', 125000.00),

(10, 'Mia', 'Walker', 'F', 'Ophthalmology', 5, 14, '9876543219', 'mia.walker@example.com', 142000.00);

#queries:

SELECT name,specialization FROM doctors WHERE experience>10;

SELECT specialization,COUNT(*) AS total_doctors FROM doctors GROUP BY specialization;

SELECT name,salary FROM doctors ORDER BY salary DESC LIMIT 5;

UPDATE doctors SET salary=salary*1.1 WHERE specialization='Cardiology';

DELETE FROM doctors WHERE status='Inactive';

ALTER TABLE doctors ADD COLUMN license_number VARCHAR(50) UNIQUE;

SELECT hospital_id,AVG(experience) AS avg_exp FROM doctors GROUP BY hospital_id HAVING AVG(experience)>8;

SELECT name,joining_date FROM doctors WHERE joining_date>'2015-01-01';

SELECT COUNT(*) FROM doctors WHERE specialization='Neurology';

```sql
#===========================================================
===========================================================
========
-- 4. Patients
CREATE TABLE patients (
    patient_id INT PRIMARY KEY,
    first_name VARCHAR(50),
    last_name VARCHAR(50),
    gender CHAR(1) CHECK (gender IN ('M', 'F')),
    dob DATE,
    country_id INT,
    disease_id INT,
    admission_date DATE,
    discharge_date DATE,
    status VARCHAR(50),
    FOREIGN KEY (country_id) REFERENCES countries(country_id),
    FOREIGN KEY (disease_id) REFERENCES diseases(disease_id)
);
INSERT INTO patients (
    patient_id, first_name, last_name, gender, dob, country_id, disease_id,
    admission_date, discharge_date, status
) VALUES
(1, 'John', 'Smith', 'M', '1985-04-12', 1, 2, '2025-07-15', '2025-07-25',
'Recovered'),
```

(2, 'Mary', 'Johnson', 'F', '1990-09-22', 2, 3, '2025-06-10', '2025-06-20', 'Recovered'),

(3, 'David', 'Lee', 'M', '1978-11-05', 3, 1, '2025-08-01', NULL, 'Under Treatment'),

(4, 'Sophia', 'Brown', 'F', '2000-02-18', 4, 4, '2025-07-28', NULL, 'Critical'),

(5, 'James', 'Wilson', 'M', '1965-06-30', 5, 5, '2025-07-12', '2025-07-19', 'Recovered'),

(6, 'Emma', 'Martinez', 'F', '1988-12-14', 6, 6, '2025-06-02', '2025-06-15', 'Recovered'),

(7, 'Liam', 'Garcia', 'M', '1995-03-09', 7, 2, '2025-07-05', '2025-07-14', 'Recovered'),

(8, 'Olivia', 'Anderson', 'F', '1972-08-27', 8, 3, '2025-07-20', NULL, 'Under Observation'),

(9, 'Noah', 'Thomas', 'M', '1983-01-16', 9, 4, '2025-06-18', '2025-06-28', 'Recovered'),

(10, 'Ava', 'Taylor', 'F', '1998-05-04', 10, 1, '2025-07-10', '2025-07-18', 'Recovered');

#queries:

SELECT first_name,last_name,status FROM patients WHERE status='Recovered';

SELECT gender,COUNT(patient_id) AS total FROM patients GROUP BY gender;

SELECT country_id,COUNT(patient_id) AS total_patients FROM patients GROUP BY country_id;

SELECT * FROM patients WHERE discharge_date IS NULL;

UPDATE patients SET status='Recovered' WHERE patient_id=4;

DELETE FROM patients WHERE status='Critical' AND country_id=5;

ALTER TABLE patients ADD COLUMN blood_group VARCHAR(5);

```sql
SELECT disease_id,COUNT(patient_id) AS cases FROM patients GROUP BY disease_id HAVING COUNT(patient_id)>1;

SELECT first_name,last_name,dob FROM patients WHERE YEAR(dob)<1980;



#================================================================================================================================

-- 5. Diseases
CREATE TABLE diseases (

    disease_id INT PRIMARY KEY,

    disease_name VARCHAR(100) NOT NULL,

    category VARCHAR(50),

    transmission_mode VARCHAR(50),

    symptoms TEXT,

    mortality_rate DECIMAL(5,2),

    discovered_year INT,

    discovered_by VARCHAR(100),

    vaccine_available BOOLEAN,

    notes TEXT

);

-- 5. Diseases

INSERT INTO diseases VALUES

(1, 'COVID-19', 'Viral', 'Airborne', 'Fever, cough, fatigue', 2.10, 2019, 'Dr. Li Wenliang', TRUE, 'Pandemic declared in 2020'),
```

(2, 'Malaria', 'Parasitic', 'Mosquito', 'Fever, chills, sweating', 0.30, 1880, 'Charles Laveran', TRUE, 'Common in tropical regions'),

(3, 'Ebola', 'Viral', 'Body fluids', 'Fever, bleeding, weakness', 50.00, 1976, 'Peter Piot', FALSE, 'High mortality rate'),

(4, 'Tuberculosis', 'Bacterial', 'Airborne', 'Cough, weight loss, fever', 15.00, 1882, 'Robert Koch', TRUE, 'Global health concern'),

(5, 'HIV/AIDS', 'Viral', 'Sexual, blood', 'Weight loss, fever, infections', 80.00, 1983, 'Luc Montagnier', FALSE, 'Antiretroviral treatment available'),

(6, 'Influenza', 'Viral', 'Airborne', 'Fever, cough, sore throat', 0.10, 1933, 'Smith, Andrewes & Laidlaw', TRUE, 'Annual outbreaks'),

(7, 'Cholera', 'Bacterial', 'Waterborne', 'Diarrhea, dehydration', 1.00, 1854, 'Filippo Pacini', TRUE, 'Linked to poor sanitation'),

(8, 'Measles', 'Viral', 'Airborne', 'Rash, fever, cough', 0.20, 1954, 'John Enders', TRUE, 'Preventable by MMR vaccine'),

(9, 'Polio', 'Viral', 'Fecal-oral', 'Paralysis, fever', 5.00, 1908, 'Karl Landsteiner', TRUE, 'Near eradication'),

(10, 'Dengue', 'Viral', 'Mosquito', 'Fever, rash, joint pain', 1.50, 1943, 'Ren Kimura', FALSE, 'No specific treatment');

#queries:

select * from disease;

SELECT disease_name,mortality_rate FROM diseases ORDER BY mortality_rate DESC LIMIT 5;

SELECT category,COUNT(disease_id) AS total FROM diseases GROUP BY category;

SELECT disease_name,discovered_year FROM diseases WHERE discovered_year<1900;

UPDATE diseases SET vaccine_available=TRUE WHERE disease_name='Dengue';

```sql
DELETE FROM diseases WHERE disease_name='Cholera' AND
mortality_rate<2.0;

ALTER TABLE diseases ADD COLUMN treatment_type VARCHAR(100);

SELECT transmission_mode,COUNT(disease_id) FROM diseases GROUP BY
transmission_mode;

SELECT disease_name,mortality_rate FROM diseases WHERE
mortality_rate>10.00;

SELECT disease_name,discovered_by FROM diseases WHERE
vaccine_available=FALSE;


#================================================================
================================================================
==


-- 6. Vaccines
CREATE TABLE vaccines (
    vaccine_id INT PRIMARY KEY,
    vaccine_name VARCHAR(100),
    manufacturer VARCHAR(100),
    disease_id INT,
    approval_year INT,
    doses_required INT,
    storage_temp DECIMAL(5,2),
    efficacy_rate DECIMAL(5,2),
    expiry_period INT,
```

```sql
    notes TEXT,

    FOREIGN KEY (disease_id) REFERENCES diseases(disease_id)

);

INSERT INTO vaccines VALUES

(1, 'Pfizer-BioNTech COVID-19', 'Pfizer', 1, 2020, 2, -70.00, 95.00, 6, 'Widely distributed globally'),

(2, 'AstraZeneca COVID-19', 'AstraZeneca', 1, 2020, 2, 2.00, 76.00, 6, 'Easier storage'),

(3, 'RTS,S', 'GlaxoSmithKline', 2, 2021, 4, 2.00, 39.00, 24, 'First malaria vaccine'),

(4, 'BCG', 'Various', 4, 1921, 1, 2.00, 70.00, 36, 'Prevents TB in children'),

(5, 'MMR', 'Merck', 8, 1971, 2, 2.00, 97.00, 36, 'Measles, mumps, rubella'),

(6, 'Oral Polio Vaccine', 'WHO', 9, 1961, 3, 2.00, 99.00, 12, 'Key in polio eradication'),

(7, 'Influenza Vaccine', 'Various', 6, 1945, 1, 2.00, 60.00, 12, 'Annual flu prevention'),

(8, 'Dengvaxia', 'Sanofi Pasteur', 10, 2015, 3, 2.00, 60.00, 24, 'Dengue prevention'),

(9, 'Cholera Vaccine', 'Shantha Biotechnics', 7, 1991, 2, 2.00, 85.00, 24, 'For high-risk regions'),

(10, 'Ebola Vaccine', 'Merck', 3, 2019, 1, -60.00, 97.00, 24, 'For outbreak control');

#queries:

select * from vaccines;

SELECT vaccine_name,efficacy_rate FROM vaccines ORDER BY efficacy_rate DESC;
```

```sql
SELECT manufacturer,COUNT(vaccine_id) FROM vaccines GROUP BY
manufacturer;

SELECT vaccine_name,approval_year FROM vaccines WHERE
approval_year<2000;

UPDATE vaccines SET efficacy_rate=92.00 WHERE vaccine_name='AstraZeneca
COVID-19';

DELETE FROM vaccines WHERE efficacy_rate<50.00;

ALTER TABLE vaccines ADD COLUMN price DECIMAL(10,2) DEFAULT 0.00;

SELECT disease_id,AVG(efficacy_rate) FROM vaccines GROUP BY disease_id;

SELECT vaccine_name,doses_required FROM vaccines WHERE
doses_required>2;

SELECT vaccine_name,expiry_period FROM vaccines WHERE
expiry_period>=24;



#================================================================
========================================================
-- 7. Vaccination_Centers
CREATE TABLE vaccination_centers (
    center_id INT PRIMARY KEY,
    center_name VARCHAR(150),
    country_id INT,
    city VARCHAR(100),
    capacity_per_day INT,
    opening_time TIME,
    closing_time TIME,
```

```sql
    contact_number VARCHAR(20),

    incharge_name VARCHAR(100),

    established_year INT,

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);


-- 7. Vaccination_Centers
INSERT INTO vaccination_centers VALUES
(1, 'Central Vaccination Hub', 1, 'Geneva', 500, '08:00', '18:00', '+41223334444', 'Dr. Alice White', 2005),

(2, 'National Immunization Center', 2, 'Delhi', 1000, '07:00', '19:00', '+911123456789', 'Dr. Raj Patel', 2010),

(3, 'City Health Clinic', 3, 'Nairobi', 300, '08:30', '17:00', '+254722334455', 'Dr. Grace Njeri', 2000),

(4, 'Public Health Centre', 4, 'London', 700, '08:00', '18:00', '+442033445566', 'Dr. James Brown', 2012),

(5, 'Community Care Hospital', 5, 'New York', 800, '09:00', '17:00', '+12123334444', 'Dr. Maria Lopez', 2008),

(6, 'Regional Vaccine Depot', 6, 'Rio de Janeiro', 600, '08:00', '16:00', '+552122334455', 'Dr. Paulo Silva', 2015),

(7, 'Provincial Immunization Centre', 7, 'Sydney', 400, '07:30', '17:00', '+61222334455', 'Dr. Emily Harris', 2018),

(8, 'Capital Health Unit', 8, 'Tokyo', 900, '08:00', '18:00', '+81322334455', 'Dr. Kenji Watanabe', 2011),

(9, 'Metropolitan Health Office', 9, 'Paris', 650, '08:00', '17:30', '+33122334455', 'Dr. Sophie Martin', 2009),
```

```sql
(10, 'Island Health Centre', 10, 'Honolulu', 200, '09:00', '15:00',
'+180822334455', 'Dr. John Carter', 2014);

#queries:

select * from vaccination_centers;

SELECT center_name,capacity_per_day FROM vaccination_centers ORDER BY
capacity_per_day DESC;

SELECT country_id,COUNT(center_id) AS total_centers FROM
vaccination_centers GROUP BY country_id;

SELECT center_name,city FROM vaccination_centers WHERE
established_year<2010;

UPDATE vaccination_centers SET capacity_per_day=capacity_per_day+200
WHERE city='Delhi';

DELETE FROM vaccination_centers WHERE capacity_per_day<300;

ALTER TABLE vaccination_centers ADD COLUMN email VARCHAR(100);

SELECT AVG(capacity_per_day) AS avg_capacity FROM vaccination_centers;

SELECT city,COUNT(center_id) AS centers FROM vaccination_centers GROUP
BY city HAVING COUNT(center_id)>1;

SELECT center_name,opening_time,closing_time FROM vaccination_centers
WHERE opening_time<'08:00';
```

#==
==

-- 8. Vaccination_Records

CREATE TABLE vaccination_records (

```sql
    record_id INT PRIMARY KEY,

    patient_id INT,

    vaccine_id INT,

    center_id INT,

    dose_number INT,

    vaccination_date DATE,

    batch_number VARCHAR(50),

    administered_by VARCHAR(100),

    side_effects TEXT,

    remarks TEXT,

    FOREIGN KEY (patient_id) REFERENCES patients(patient_id),

    FOREIGN KEY (vaccine_id) REFERENCES vaccines(vaccine_id),

    FOREIGN KEY (center_id) REFERENCES vaccination_centers(center_id)
);
INSERT INTO vaccination_records VALUES

(1, 1, 1, 1, 1, '2024-01-10', 'BATCH001', 'Nurse Alice', 'Mild fever', 'No complications'),

(2, 2, 2, 2, 1, '2024-02-12', 'BATCH002', 'Nurse Ben', 'None', 'Patient healthy'),

(3, 3, 1, 3, 2, '2024-03-15', 'BATCH003', 'Nurse Carla', 'Sore arm', 'Follow-up in 2 weeks'),

(4, 4, 3, 1, 1, '2024-04-18', 'BATCH004', 'Dr. David', 'None', 'All good'),

(5, 5, 4, 2, 1, '2024-05-20', 'BATCH005', 'Nurse Emily', 'Headache', 'Mild symptom'),

(6, 6, 1, 4, 1, '2024-06-25', 'BATCH006', 'Nurse Frank', 'None', 'No concerns'),
```

(7, 7, 2, 5, 2, '2024-07-28', 'BATCH007', 'Nurse Grace', 'Mild rash', 'Resolved in 1 day'),

(8, 8, 3, 3, 1, '2024-08-30', 'BATCH008', 'Dr. Henry', 'None', 'Stable'),

(9, 9, 4, 2, 1, '2024-09-05', 'BATCH009', 'Nurse Ivy', 'Fatigue', 'Advised rest'),

(10, 10, 1, 1, 3, '2024-10-10', 'BATCH010', 'Nurse Jack', 'None', 'No side effects');

#queries:

select * from vaccination_records;

SELECT patient_id,vaccine_id,vaccination_date FROM vaccination_records;

SELECT COUNT(*) FROM vaccination_records WHERE dose_number=1;

SELECT center_id,COUNT(*) FROM vaccination_records GROUP BY center_id;

SELECT vaccine_id,AVG(dose_number) FROM vaccination_records GROUP BY vaccine_id;

UPDATE vaccination_records SET remarks='Follow up needed' WHERE side_effects<>'None';

DELETE FROM vaccination_records WHERE record_id=10;

SELECT administered_by,COUNT(*) FROM vaccination_records GROUP BY administered_by;

SELECT vaccine_id,COUNT(*) FROM vaccination_records GROUP BY vaccine_id HAVING COUNT(*)>2;

ALTER TABLE vaccination_records ADD COLUMN verified BOOLEAN DEFAULT FALSE;

SELECT patient_id,batch_number FROM vaccination_records WHERE vaccination_date>'2024-06-01';

```
#================================================================
================================================================



-- 9. Research_Projects

CREATE TABLE research_projects (

    project_id INT PRIMARY KEY,

    project_name VARCHAR(150),

    disease_id INT,

    start_date DATE,

    end_date DATE,

    budget DECIMAL(15,2),

    lead_scientist VARCHAR(100),

    status VARCHAR(50),

    findings TEXT,

    funding_source VARCHAR(100),

    FOREIGN KEY (disease_id) REFERENCES diseases(disease_id)

);

INSERT INTO research_projects VALUES

(1, 'HIV Vaccine Development', 1, '2023-01-01', '2026-12-31', 5000000.00, 'Dr. Adams', 'Ongoing', 'Initial trials promising', 'WHO'),

(2, 'TB Cure Initiative', 2, '2022-03-01', '2025-03-01', 3000000.00, 'Dr. Baker', 'Ongoing', 'Improved drug formula', 'Gates Foundation'),

(3, 'Cancer Genomics Study', 3, '2021-05-15', '2024-05-15', 4500000.00, 'Dr. Carter', 'Completed', 'New genetic markers found', 'NIH'),
```

```sql
(4, 'Diabetes Prevention Program', 4, '2022-07-10', '2025-07-10', 2500000.00, 'Dr. Daniels', 'Ongoing', 'Community outreach success', 'WHO'),

(5, 'Malaria Eradication Research', 5, '2020-09-01', '2023-09-01', 4000000.00, 'Dr. Evans', 'Completed', 'Effective vaccine candidate', 'UNICEF'),

(6, 'Ebola Antiviral Study', 6, '2021-10-01', '2024-10-01', 3500000.00, 'Dr. Flores', 'Ongoing', 'Promising lab results', 'WHO'),

(7, 'Mental Health Support Systems', 7, '2022-02-01', '2025-02-01', 1500000.00, 'Dr. Garcia', 'Ongoing', 'Digital therapy tools developed', 'WHO'),

(8, 'Child Nutrition Project', 8, '2023-04-15', '2026-04-15', 2800000.00, 'Dr. Harris', 'Ongoing', 'Nutritional supplements distributed', 'FAO'),

(9, 'Air Pollution Health Impact Study', 9, '2021-08-20', '2024-08-20', 2000000.00, 'Dr. Irving', 'Completed', 'Linked PM2.5 to heart disease', 'UNEP'),

(10, 'Rare Disease Database', 10, '2023-09-01', '2026-09-01', 1800000.00, 'Dr. Johnson', 'Ongoing', 'Global registry created', 'WHO');

#queries:

select * from research_projects;

SELECT project_name,budget FROM research_projects WHERE status='Ongoing';

SELECT disease_id,COUNT(*) FROM research_projects GROUP BY disease_id;

SELECT AVG(budget) FROM research_projects;

UPDATE research_projects SET status='Extended' WHERE end_date>'2025-12-31';

DELETE FROM research_projects WHERE project_id=5;

SELECT funding_source,SUM(budget) FROM research_projects GROUP BY funding_source;

SELECT lead_scientist,COUNT(*) FROM research_projects GROUP BY lead_scientist;
```

```sql
ALTER TABLE research_projects ADD COLUMN collaborators INT DEFAULT 0;

SELECT project_name,end_date FROM research_projects ORDER BY end_date
DESC;

SELECT project_name,findings FROM research_projects WHERE
status='Completed';


#===========================================================
===========================================================
-- 10. Funding
CREATE TABLE funding (

    funding_id INT PRIMARY KEY,

    project_id INT,

    donor_name VARCHAR(100),

    country_id INT,

    amount DECIMAL(15,2),

    funding_date DATE,

    currency VARCHAR(10),

    purpose TEXT,

    contact_email VARCHAR(100),

    remarks TEXT,

    FOREIGN KEY (project_id) REFERENCES research_projects(project_id),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)
);
INSERT INTO funding VALUES
```

(1, 1, 'Gates Foundation', 1, 1000000.00, '2023-02-01', 'USD', 'Vaccine research', 'contact@gates.org', 'Phase 1 funding'),

(2, 2, 'UNICEF', 2, 800000.00, '2023-03-05', 'USD', 'TB awareness', 'health@unicef.org', 'Annual grant'),

(3, 3, 'NIH', 3, 1200000.00, '2023-04-10', 'USD', 'Cancer genomics', 'research@nih.gov', 'Yearly support'),

(4, 4, 'WHO', 4, 900000.00, '2023-05-15', 'USD', 'Diabetes program', 'funding@who.int', 'Quarterly installment'),

(5, 5, 'FAO', 5, 700000.00, '2023-06-20', 'USD', 'Malaria eradication', 'aid@fao.org', 'Final payment'),

(6, 6, 'CDC', 6, 1100000.00, '2023-07-25', 'USD', 'Ebola study', 'cdc@cdc.gov', 'Ongoing project'),

(7, 7, 'Global Fund', 7, 500000.00, '2023-08-30', 'USD', 'Mental health programs', 'global@fund.org', 'Pilot project'),

(8, 8, 'UNDP', 8, 600000.00, '2023-09-04', 'USD', 'Child nutrition', 'undp@org', 'Year 1 allocation'),

(9, 9, 'Green Earth Org', 9, 450000.00, '2023-10-10', 'USD', 'Air pollution research', 'contact@geo.org', 'Grant cycle'),

(10, 10, 'WHO', 10, 400000.00, '2023-11-15', 'USD', 'Rare disease registry', 'funding@who.int', 'Initial funding');

#queries:

select * from funding;

SELECT donor_name,amount FROM funding WHERE amount>800000;

SELECT country_id,SUM(amount) FROM funding GROUP BY country_id;

SELECT project_id,COUNT(*) FROM funding GROUP BY project_id;

UPDATE funding SET remarks='Reviewed' WHERE funding_id=3;

DELETE FROM funding WHERE funding_id=9;

```sql
SELECT donor_name,AVG(amount) FROM funding GROUP BY donor_name;

SELECT currency,SUM(amount) FROM funding GROUP BY currency;

ALTER TABLE funding ADD COLUMN confirmed BOOLEAN DEFAULT TRUE;

SELECT donor_name,MAX(amount) FROM funding GROUP BY donor_name;

SELECT project_id,SUM(amount) FROM funding GROUP BY project_id HAVING
SUM(amount)>1000000;
```

#==
==

-- 11. Awareness_Campaigns

```sql
CREATE TABLE awareness_campaigns (

    campaign_id INT PRIMARY KEY,

    campaign_name VARCHAR(150),

    country_id INT,

    start_date DATE,

    end_date DATE,

    target_audience TEXT,

    budget DECIMAL(15,2),

    organizer VARCHAR(100),

    media_channels TEXT,

    outcome TEXT,

    FOREIGN KEY (country_id) REFERENCES countries(country_id)
```

```sql
);

INSERT INTO awareness_campaigns

(campaign_id, campaign_name, country_id, start_date, end_date,
target_audience, budget, organizer, media_channels, outcome)

VALUES

(1, 'Anti-Smoking Awareness', 1, '2024-01-10', '2024-02-15', 'Youth and Adults',
500000.00, 'Health Ministry', 'TV, Radio, Social Media', 'Reduced smoking
rates'),

(2, 'COVID-19 Vaccination Drive', 2, '2023-03-01', '2023-12-31', 'All Citizens',
2000000.00, 'National Health Agency', 'TV, Print, Online', 'High vaccination
coverage'),

(3, 'Mental Health Week', 3, '2024-05-05', '2024-05-12', 'Students and
Employees', 300000.00, 'Wellness NGO', 'Workshops, Social Media', 'Increased
awareness on mental health'),

(4, 'Breast Cancer Screening', 4, '2023-10-01', '2023-10-31', 'Women aged 25-
50', 750000.00, 'Cancer Society', 'Hospitals, TV, Flyers', 'More early
detections'),

(5, 'Nutrition Awareness Program', 5, '2024-06-01', '2024-06-30', 'Children and
Parents', 400000.00, 'Food Safety Dept', 'Schools, Social Media', 'Improved
dietary habits'),

(6, 'Road Safety Campaign', 6, '2024-07-15', '2024-08-15', 'Drivers and
Pedestrians', 600000.00, 'Transport Authority', 'Billboards, Radio, TV', 'Reduced
road accidents'),

(7, 'HIV/AIDS Awareness', 7, '2023-12-01', '2023-12-31', 'Young Adults',
550000.00, 'Global Health Org', 'Posters, Online Ads, Seminars', 'Increased HIV
testing'),

(8, 'Clean Water Initiative', 8, '2024-04-01', '2024-09-30', 'Rural Villages',
1000000.00, 'WaterAid NGO', 'Community Events, Radio', 'Better access to
clean water'),
```

(9, 'Diabetes Prevention Drive', 9, '2024-02-01', '2024-02-28', 'Adults over 30', 650000.00, 'Diabetes Foundation', 'Hospitals, Online Ads', 'Increased awareness of diabetes risk'),

(10, 'Child Vaccination Week', 10, '2024-09-01', '2024-09-07', 'Children under 5', 700000.00, 'UNICEF', 'Schools, Clinics, Radio', 'Higher child immunization rates');

#queries:

select * from awareness_campaigns;

SELECT campaign_name,budget FROM awareness_campaigns WHERE budget>600000;

SELECT country_id,COUNT(*) FROM awareness_campaigns GROUP BY country_id;

SELECT organizer,SUM(budget) FROM awareness_campaigns GROUP BY organizer;

UPDATE awareness_campaigns SET outcome='Successful' WHERE campaign_id=4;

DELETE FROM awareness_campaigns WHERE campaign_id=7;

SELECT AVG(budget) FROM awareness_campaigns;

SELECT media_channels,COUNT(*) FROM awareness_campaigns GROUP BY media_channels;

ALTER TABLE awareness_campaigns ADD COLUMN evaluation TEXT;

SELECT campaign_name,end_date FROM awareness_campaigns ORDER BY end_date DESC;

SELECT campaign_name,target_audience FROM awareness_campaigns WHERE start_date>'2024-06-01';

```
#================================================================
================================================================
=
-- 12. Laboratories
CREATE TABLE laboratories (
    lab_id INT PRIMARY KEY,
    lab_name VARCHAR(150),
    country_id INT,
    city VARCHAR(100),
    established_year INT,
    head_scientist VARCHAR(100),
    research_focus TEXT,
    accreditation VARCHAR(100),
    phone VARCHAR(20),
    email VARCHAR(100),
    FOREIGN KEY (country_id) REFERENCES countries(country_id)
);
```

use Projects;

INSERT INTO laboratories

VALUES

(1, 'Global Health Lab', 1, 'Delhi', 2001, 'Research', 'Dr. Rajesh Kumar', 150, '+91-9810000001', 'info@ghlab.org'),

(2, 'BioMed Diagnostics', 2, 'Cairo', 1998, 'Diagnostic', 'Dr. Mona Youssef', 120, '+20-1000000002', 'contact@biomed.eg'),

(3, 'MedTech Labs', 3, 'Berlin', 2005, 'Research', 'Dr. Hans Müller', 200, '+49-300000003', 'info@medtech.de'),

(4, 'Life Sciences Center', 4, 'Tokyo', 2010, 'Research', 'Dr. Sato Hiroshi', 250, '+81-300000004', 'lsc@tokyo.jp'),

(5, 'HealthCheck Labs', 5, 'London', 2003, 'Diagnostic', 'Dr. Emily Johnson', 180, '+44-700000005', 'support@healthcheck.uk'),

(6, 'PathoCare', 6, 'Nairobi', 2012, 'Diagnostic', 'Dr. John Otieno', 100, '+254-700000006', 'pathocare@ke.org'),

(7, 'MediScan', 7, 'Sydney', 2000, 'Research', 'Dr. Olivia Brown', 90, '+61-200000007', 'mediscan@au.org'),

(8, 'Vital Labs', 8, 'Toronto', 2015, 'Diagnostic', 'Dr. Liam Smith', 75, '+1-600000008', 'vital@ca.org'),

(9, 'CureTech', 9, 'New York', 2008, 'Research', 'Dr. Sarah White', 220, '+1-900000009', 'curetech@us.org'),

(10, 'Wellness Labs', 10, 'Rio de Janeiro', 2004, 'Diagnostic', 'Dr. Ana Silva', 130, '+55-210000010', 'wellness@br.org');

#queries:

select * from laboratories;

SELECT lab_name,city FROM laboratories WHERE established_year>2005;

SELECT country_id,COUNT(*) FROM laboratories GROUP BY country_id;

SELECT head_scientist,COUNT(*) FROM laboratories GROUP BY head_scientist;

UPDATE laboratories SET email='updated@lab.org' WHERE lab_id=2;

DELETE FROM laboratories WHERE lab_id=10;

SELECT accreditation,COUNT(*) FROM laboratories GROUP BY accreditation;

SELECT AVG(established_year) FROM laboratories;

ALTER TABLE laboratories ADD COLUMN capacity INT DEFAULT 100;

```sql
SELECT lab_name,phone FROM laboratories WHERE
research_focus='Research';

SELECT city,COUNT(*) FROM laboratories GROUP BY city HAVING COUNT(*)>1;
```

#==

-- 13. Lab_Tests
```sql
CREATE TABLE lab_tests (
    test_id INT PRIMARY KEY,

    patient_id INT,

    lab_id INT,

    test_name VARCHAR(100),

    test_date DATE,

    result VARCHAR(50),

    normal_range VARCHAR(50),

    tested_by VARCHAR(100),

    cost DECIMAL(10,2),

    remarks TEXT,

    FOREIGN KEY (patient_id) REFERENCES patients(patient_id),

    FOREIGN KEY (lab_id) REFERENCES laboratories(lab_id)
);
INSERT INTO lab_tests
 VALUES
```

(1, 1, 1, 'Blood Sugar', '2025-01-05', '110 mg/dL', '70-110 mg/dL', 'Dr. Alice Brown', 500.00, 'Normal'),

(2, 2, 2, 'Cholesterol', '2025-01-06', '190 mg/dL', '<200 mg/dL', 'Dr. Mark Smith', 800.00, 'Slightly High'),

(3, 3, 3, 'Hemoglobin', '2025-01-07', '13 g/dL', '12-15 g/dL', 'Dr. John White', 400.00, 'Normal'),

(4, 4, 1, 'Liver Function', '2025-01-08', 'Normal', 'Normal', 'Dr. Alice Brown', 1200.00, 'Normal'),

(5, 5, 2, 'Thyroid', '2025-01-09', '2.5 mIU/L', '0.5-4.5 mIU/L', 'Dr. Mark Smith', 1000.00, 'Normal'),

(6, 6, 3, 'Urine Test', '2025-01-10', 'Clear', 'Clear', 'Dr. John White', 300.00, 'Normal'),

(7, 7, 1, 'ECG', '2025-01-11', 'Normal', 'Normal', 'Dr. Alice Brown', 1500.00, 'Normal'),

(8, 8, 2, 'Vitamin D', '2025-01-12', '25 ng/mL', '20-50 ng/mL', 'Dr. Mark Smith', 900.00, 'Low-Normal'),

(9, 9, 3, 'Calcium', '2025-01-13', '9.5 mg/dL', '8.5-10.5 mg/dL', 'Dr. John White', 600.00, 'Normal'),

(10, 10, 1, 'HIV Test', '2025-01-14', 'Negative', 'Negative', 'Dr. Alice Brown', 2000.00, 'Negative');

#queries:

select * from lab_tests;

SELECT test_name,cost FROM lab_tests WHERE cost>1000;

SELECT patient_id,COUNT(*) FROM lab_tests GROUP BY patient_id;

SELECT lab_id,AVG(cost) FROM lab_tests GROUP BY lab_id;

UPDATE lab_tests SET remarks='Recheck needed' WHERE result='Slightly High';

DELETE FROM lab_tests WHERE test_id=8;

```sql
SELECT tested_by,COUNT(*) FROM lab_tests GROUP BY tested_by;

SELECT AVG(cost) FROM lab_tests;

ALTER TABLE lab_tests ADD COLUMN verified varchar(70);

SELECT test_name,result FROM lab_tests ORDER BY test_date DESC;

SELECT test_name,COUNT(*) FROM lab_tests GROUP BY test_name HAVING
COUNT(*)>1;



#================================================================
================================================================
===



-- 14. Health_Programs
CREATE TABLE health_programs (
    program_id INT PRIMARY KEY,
    program_name VARCHAR(150),
    start_date DATE,
    end_date DATE,
    target_region VARCHAR(100),
    budget DECIMAL(15,2),
    funded_by VARCHAR(100),
    managed_by VARCHAR(100),
    objectives TEXT,
    outcome TEXT
```

```sql
);

INSERT INTO health_programs (program_id, program_name, start_date, end_date, target_region, budget, funded_by, managed_by, objectives, outcome) VALUES

(1, 'Immunization Drive', '2025-01-01', '2025-06-30', 'Asia', 5000000.00, 'UNICEF', 'WHO', 'Increase vaccination coverage', 'Ongoing'),

(2, 'Malaria Eradication', '2025-02-01', '2025-12-31', 'Africa', 8000000.00, 'Bill & Melinda Gates Foundation', 'WHO', 'Reduce malaria cases', 'In Progress'),

(3, 'Clean Water Project', '2025-03-01', '2026-03-01', 'South America', 3000000.00, 'WHO', 'WHO', 'Provide clean water access', 'In Progress'),

(4, 'HIV Awareness', '2025-04-01', '2025-09-30', 'Global', 2000000.00, 'Global Fund', 'WHO', 'Increase HIV testing', 'Planned'),

(5, 'Nutrition Program', '2025-05-01', '2026-05-01', 'Asia', 2500000.00, 'UNICEF', 'WHO', 'Reduce malnutrition', 'Ongoing'),

(6, 'Cancer Screening', '2025-06-01', '2026-06-01', 'Europe', 6000000.00, 'WHO', 'WHO', 'Increase early detection', 'Planned'),

(7, 'Mental Health Support', '2025-07-01', '2025-12-31', 'North America', 4000000.00, 'WHO', 'WHO', 'Provide counseling services', 'In Progress'),

(8, 'Tuberculosis Control', '2025-08-01', '2026-08-01', 'Africa', 7000000.00, 'Global Fund', 'WHO', 'Reduce TB cases', 'Planned'),

(9, 'Child Health Program', '2025-09-01', '2026-03-01', 'Asia', 3500000.00, 'UNICEF', 'WHO', 'Improve child healthcare', 'Ongoing'),

(10, 'COVID-19 Recovery', '2025-10-01', '2026-10-01', 'Global', 9000000.00, 'WHO', 'WHO', 'Support post-COVID recovery', 'In Progress');

#queries:

select * from health_programs;

SELECT program_name,budget FROM health_programs WHERE budget>5000000;
```

```sql
SELECT target_region,COUNT(*) FROM health_programs GROUP BY target_region;

SELECT funded_by,SUM(budget) FROM health_programs GROUP BY funded_by;

UPDATE health_programs SET outcome='Extended' WHERE end_date>'2026-01-01';

DELETE FROM health_programs WHERE program_id=4;

SELECT AVG(budget) FROM health_programs;

SELECT managed_by,COUNT(*) FROM health_programs GROUP BY managed_by;

ALTER TABLE health_programs ADD COLUMN participants INT DEFAULT 0;

SELECT program_name,end_date FROM health_programs ORDER BY end_date;

SELECT program_name,outcome FROM health_programs WHERE outcome='Ongoing';
```

#==
====

-- 15. Program_Beneficiaries

CREATE TABLE program_beneficiaries (

    beneficiary_id INT PRIMARY KEY,

    program_id INT,

    name VARCHAR(100),

    age INT,

```sql
    gender CHAR(1),

    country_id INT,

    benefit_type VARCHAR(100),

    received_date DATE,

    remarks TEXT,

    status VARCHAR(50),

    FOREIGN KEY (program_id) REFERENCES health_programs(program_id),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);

INSERT INTO program_beneficiaries (beneficiary_id, program_id, name, age,
gender, country_id, benefit_type, received_date, remarks, status) VALUES

(1, 1, 'Ravi Kumar', 5, 'M', 1, 'Vaccination', '2025-02-10', 'Healthy',
'Completed'),

(2, 1, 'Anita Sharma', 4, 'F', 1, 'Vaccination', '2025-02-12', 'Healthy',
'Completed'),

(3, 2, 'John Doe', 35, 'M', 2, 'Medicine', '2025-03-01', 'Recovered', 'Completed'),

(4, 2, 'Mary Jane', 29, 'F', 2, 'Medicine', '2025-03-05', 'Recovered', 'Completed'),

(5, 3, 'Carlos Mendes', 40, 'M', 3, 'Clean Water Access', '2025-04-15', 'Improved
Health', 'Ongoing'),

(6, 4, 'Sarah Lee', 25, 'F', 4, 'HIV Test', '2025-05-20', 'Negative', 'Completed'),

(7, 5, 'Raj Patel', 10, 'M', 1, 'Nutrition Pack', '2025-06-01', 'Healthy Weight',
'Ongoing'),

(8, 6, 'Elena Rossi', 50, 'F', 5, 'Cancer Screening', '2025-07-10', 'Normal',
'Completed'),

(9, 7, 'Michael Brown', 32, 'M', 6, 'Counseling', '2025-08-05', 'Improved',
'Ongoing'),
```

```sql
(10, 8, 'Aisha Ali', 27, 'F', 2, 'TB Medicine', '2025-09-15', 'Recovering',
'Ongoing');

#queries:

select * from program_beneficiaries;

SELECT name,age,gender FROM program_beneficiaries WHERE country_id=1;

SELECT benefit_type,COUNT(*) FROM program_beneficiaries GROUP BY
benefit_type;

SELECT program_id,AVG(age) FROM program_beneficiaries GROUP BY
program_id;

UPDATE program_beneficiaries SET status='Completed' WHERE
beneficiary_id=7;

DELETE FROM program_beneficiaries WHERE remarks='Recovering';

SELECT gender,COUNT(*) FROM program_beneficiaries GROUP BY gender;

ALTER TABLE program_beneficiaries ADD COLUMN contact VARCHAR(20);

SELECT name,received_date FROM program_beneficiaries WHERE
received_date BETWEEN '2025-02-01' AND '2025-06-30';

SELECT status,COUNT(*) FROM program_beneficiaries GROUP BY status
HAVING COUNT(*)>2;
```

```
#================================================================
================================================================
==
```

-- 16. Health_Workers

```sql
CREATE TABLE health_workers (

    worker_id INT PRIMARY KEY,
```

```sql
    first_name VARCHAR(50),

    last_name VARCHAR(50),

    gender CHAR(1),

    country_id INT,

    job_role VARCHAR(100),

    experience_years INT,

    phone VARCHAR(20),

    email VARCHAR(100),

    salary DECIMAL(12,2),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)
);
INSERT INTO health_workers (worker_id, first_name, last_name, gender, country_id, job_role, experience_years, phone, email, salary) VALUES
(1, 'Alice', 'Brown', 'F', 1, 'Nurse', 5, '+91-9876543210', 'alice.brown@example.com', 40000.00),
(2, 'Mark', 'Smith', 'M', 2, 'Doctor', 10, '+1-555-123456', 'mark.smith@example.com', 90000.00),
(3, 'John', 'White', 'M', 3, 'Lab Technician', 8, '+55-21-98765432', 'john.white@example.com', 50000.00),
(4, 'Emma', 'Taylor', 'F', 4, 'Surgeon', 12, '+44-20-12345678', 'emma.taylor@example.com', 120000.00),
(5, 'David', 'Lee', 'M', 5, 'Pharmacist', 7, '+39-06-9876543', 'david.lee@example.com', 60000.00),
(6, 'Sophia', 'Garcia', 'F', 6, 'Counselor', 6, '+33-1-23456789', 'sophia.garcia@example.com', 55000.00),
```

```sql
(7, 'James', 'Brown', 'M', 1, 'Paramedic', 4, '+91-9123456789',
'james.brown@example.com', 35000.00),

(8, 'Olivia', 'Wilson', 'F', 2, 'Midwife', 9, '+1-555-987654',
'olivia.wilson@example.com', 45000.00),

(9, 'Liam', 'Davis', 'M', 3, 'Radiologist', 11, '+55-21-12345678',
'liam.davis@example.com', 80000.00),

(10, 'Mia', 'Martinez', 'F', 4, 'Dentist', 5, '+44-20-98765432',
'mia.martinez@example.com', 70000.00);

#queries:

select * from health_workers;

SELECT first_name,last_name,job_role FROM health_workers WHERE
salary>60000;

SELECT country_id,AVG(salary) FROM health_workers GROUP BY country_id;

UPDATE health_workers SET salary=salary*1.05 WHERE experience_years>10;

DELETE FROM health_workers WHERE job_role='Paramedic';

ALTER TABLE health_workers ADD COLUMN hire_date DATE;

SELECT job_role,COUNT(*) FROM health_workers GROUP BY job_role;

SELECT gender,AVG(experience_years) FROM health_workers GROUP BY
gender;

SELECT MAX(salary) AS highest_salary FROM health_workers;

SELECT job_role,AVG(salary) FROM health_workers GROUP BY job_role
HAVING AVG(salary)>50000;
```

```
#================================================================
================================================================
====

-- 17. Disease_Outbreaks

CREATE TABLE disease_outbreaks (

    outbreak_id INT PRIMARY KEY,

    disease_id INT,

    country_id INT,

    start_date DATE,

    end_date DATE,

    cases_reported INT,

    deaths INT,

    recovery_rate DECIMAL(5,2),

    cause TEXT,

    response_measures TEXT,

    FOREIGN KEY (disease_id) REFERENCES diseases(disease_id),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);
```

INSERT INTO disease_outbreaks (outbreak_id, disease_id, country_id, start_date, end_date, cases_reported, deaths, recovery_rate, cause, response_measures) VALUES

(1, 1, 1, '2025-01-01', '2025-01-15', 200, 5, 97.50, 'Contaminated Water', 'Water purification'),

(2, 2, 2, '2025-02-01', '2025-02-20', 500, 20, 96.00, 'Mosquitoes', 'Fumigation'),

(3, 3, 3, '2025-03-01', '2025-03-10', 150, 2, 98.70, 'Virus Spread', 'Quarantine'),

```sql
(4, 4, 4, '2025-04-01', '2025-04-15', 300, 15, 95.00, 'Airborne', 'Mask
distribution'),

(5, 5, 5, '2025-05-01', '2025-05-30', 400, 50, 87.50, 'Food Contamination', 'Food
inspection'),

(6, 6, 6, '2025-06-01', '2025-06-25', 600, 40, 93.33, 'Bacteria', 'Medical
treatment'),

(7, 7, 1, '2025-07-01', '2025-07-20', 250, 10, 96.00, 'Virus Mutation',
'Vaccination'),

(8, 8, 2, '2025-08-01', '2025-08-18', 350, 25, 92.85, 'Air Pollution', 'Mask
distribution'),

(9, 9, 3, '2025-09-01', '2025-09-12', 100, 3, 97.00, 'Water Contamination',
'Water filters'),

(10, 10, 4, '2025-10-01', '2025-10-25', 450, 30, 93.33, 'Virus Spread',
'Lockdown');

#queries:

select * from diseases_outbreaks;

SELECT disease_id,country_id,cases_reported FROM disease_outbreaks
WHERE cases_reported>300;

SELECT disease_id,SUM(deaths) FROM disease_outbreaks GROUP BY
disease_id;

UPDATE disease_outbreaks SET response_measures='Vaccination and
Quarantine' WHERE outbreak_id=3;

DELETE FROM disease_outbreaks WHERE recovery_rate<90.00;

ALTER TABLE disease_outbreaks ADD COLUMN reported_by VARCHAR(100);

SELECT country_id,AVG(recovery_rate) FROM disease_outbreaks GROUP BY
country_id;
```

```sql
SELECT disease_id,MAX(cases_reported) FROM disease_outbreaks GROUP BY
disease_id;

SELECT disease_id,AVG(deaths) FROM disease_outbreaks GROUP BY
disease_id HAVING AVG(deaths)>20;

SELECT outbreak_id,end_date-start_date AS duration FROM
disease_outbreaks;
```

#===
=====

-- 18. Medical_Supplies

```sql
CREATE TABLE medical_supplies (
    supply_id INT PRIMARY KEY,
    supply_name VARCHAR(100),
    category VARCHAR(50),
    quantity INT,
    unit_price DECIMAL(10,2),
    supplier_id INT,
    manufacture_date DATE,
    expiry_date DATE,
    storage_conditions TEXT,
    notes TEXT,
    FOREIGN KEY (supplier_id) REFERENCES suppliers(supplier_id)
);
```

```sql
INSERT INTO medical_supplies

(supply_id, supply_name, category, quantity, unit_price, supplier_id,
manufacture_date, expiry_date, storage_conditions, notes) VALUES

(1, 'Surgical Masks', 'PPE', 5000, 0.50, 1, '2025-01-01', '2027-01-01', 'Cool, dry
place', 'For hospital use'),

(2, 'Gloves', 'PPE', 10000, 0.10, 2, '2025-02-10', '2026-02-10', 'Room
temperature', 'Latex-free'),

(3, 'Hand Sanitizer', 'Hygiene', 2000, 3.00, 1, '2025-03-15', '2027-03-15', 'Avoid
sunlight', 'Alcohol-based'),

(4, 'Ventilators', 'Equipment', 50, 25000.00, 3, '2025-01-20', '2030-01-20',
'Indoor, dust-free', 'ICU use'),

(5, 'Face Shields', 'PPE', 3000, 2.00, 4, '2025-04-01', '2028-04-01', 'Cool, dry
place', 'Reusable'),

(6, 'Thermometers', 'Equipment', 150, 20.00, 2, '2025-01-05', '2029-01-05',
'Avoid moisture', 'Digital'),

(7, 'Oxygen Cylinders', 'Equipment', 100, 150.00, 5, '2025-05-01', '2030-05-01',
'Indoor storage', 'Full tank'),

(8, 'Syringes', 'Medical', 8000, 0.20, 1, '2025-06-10', '2028-06-10', 'Dry storage',
'Disposable'),

(9, 'IV Fluids', 'Medical', 2000, 5.00, 3, '2025-07-01', '2026-07-01', 'Cool place',
'Sterile'),

(10, 'Defibrillators', 'Equipment', 20, 1200.00, 4, '2025-01-15', '2035-01-15',
'Indoor, cool', 'Emergency use');

#queries:

select * from medical_supplies;

SELECT supply_name,quantity,unit_price FROM medical_supplies WHERE
category='PPE';
```

```sql
SELECT supplier_id,SUM(quantity) FROM medical_supplies GROUP BY supplier_id;

UPDATE medical_supplies SET quantity=quantity-100 WHERE supply_id=1;

DELETE FROM medical_supplies WHERE expiry_date<'2026-01-01';

ALTER TABLE medical_supplies ADD COLUMN batch_no VARCHAR(50);

SELECT category,AVG(unit_price) FROM medical_supplies GROUP BY category;

SELECT MAX(unit_price) AS max_price FROM medical_supplies;

SELECT category,SUM(quantity) FROM medical_supplies GROUP BY category HAVING SUM(quantity)>500;

SELECT supply_name,expiry_date-manufacture_date AS shelf_life FROM medical_supplies;



#================================================================================================================================
-- 19. Suppliers
CREATE TABLE suppliers (
    supplier_id INT PRIMARY KEY,
    supplier_name VARCHAR(100),
    country_id INT,
    contact_name VARCHAR(100),
    phone VARCHAR(20),
    email VARCHAR(100),
    address TEXT,
    city VARCHAR(50),
```

```sql
    state VARCHAR(50),

    postal_code VARCHAR(20),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);

INSERT INTO suppliers

(supplier_id, supplier_name, country_id, contact_name, phone, email, address, city, state, postal_code) VALUES

(1, 'MediSupply Co.', 1, 'John Carter', '+123456789', 'john@medisupply.com', '123 Health St', 'New York', 'NY', '10001'),

(2, 'SafeCare Ltd.', 2, 'Anna Smith', '+44123456789', 'anna@safecare.com', '45 Wellness Ave', 'London', 'London', 'EC1A'),

(3, 'LifeEquip Inc.', 3, 'Robert Brown', '+6123456789', 'robert@lifeequip.com', '78 Medical Rd', 'Sydney', 'NSW', '2000'),

(4, 'HealthFirst', 4, 'Emily Johnson', '+33123456789', 'emily@healthfirst.fr', '22 Rue Santé', 'Paris', 'Île-de-France', '75001'),

(5, 'GlobalMed', 5, 'David Wilson', '+911234567890', 'david@globalmed.in', '56 Care Blvd', 'Mumbai', 'MH', '400001'),

(6, 'MediPro', 6, 'Sarah Lee', '+82123456789', 'sarah@medipro.kr', '89 Healing St', 'Seoul', 'Seoul', '04524'),

(7, 'BioSafe', 7, 'Michael Chen', '+861234567890', 'michael@biosafe.cn', '33 Pharma Rd', 'Beijing', 'BJ', '100000'),

(8, 'SafeMeds', 8, 'Laura Garcia', '+34123456789', 'laura@safemeds.es', '77 Salud Ave', 'Madrid', 'Madrid', '28001'),

(9, 'MediWorld', 9, 'Tom Baker', '+55123456789', 'tom@mediworld.br', '14 Vida St', 'Rio', 'RJ', '20000'),

(10, 'CareLink', 10, 'Linda Davis', '+27123456789', 'linda@carelink.za', '101 Wellness Dr', 'Cape Town', 'WC', '8000');
```

```
#queries:

select * from suppliers;

SELECT supplier_name,contact_name,phone FROM suppliers WHERE
country_id=1;

SELECT country_id,COUNT(*) FROM suppliers GROUP BY country_id;

UPDATE suppliers SET city='New Delhi' WHERE supplier_id=5;

DELETE FROM suppliers WHERE city='Rio';

ALTER TABLE suppliers ADD COLUMN website VARCHAR(100);

SELECT state,COUNT(*) FROM suppliers GROUP BY state;

SELECT MAX(supplier_id) AS latest_supplier FROM suppliers;

SELECT city,COUNT(*) FROM suppliers GROUP BY city HAVING COUNT(*)>1;

SELECT supplier_name,email FROM suppliers WHERE email LIKE '%.com';


#================================================================
================================================================
===
-- 20. Training_Programs
```

CREATE TABLE training_programs (

   training_id INT PRIMARY KEY,

   training_name VARCHAR(150),

   start_date DATE,

   end_date DATE,

   topic VARCHAR(100),

   instructor VARCHAR(100),

```sql
    country_id INT,

    participants INT,

    budget DECIMAL(12,2),

    outcome TEXT,

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);

INSERT INTO training_programs

(training_id, training_name, start_date, end_date, topic, instructor,
country_id, participants, budget, outcome) VALUES

(1, 'Basic First Aid', '2025-01-05', '2025-01-10', 'First Aid', 'Dr. Smith', 1, 50,
5000.00, 'Completed'),

(2, 'Disaster Management', '2025-02-01', '2025-02-15', 'Emergency Response',
'Dr. Lee', 2, 30, 8000.00, 'Successful'),

(3, 'Infection Control', '2025-03-10', '2025-03-20', 'Hygiene', 'Dr. Kim', 3, 40,
6000.00, 'Ongoing'),

(4, 'Advanced Nursing', '2025-04-01', '2025-04-30', 'Nursing', 'Dr. Brown', 4, 25,
10000.00, 'Completed'),

(5, 'CPR Certification', '2025-05-05', '2025-05-07', 'Resuscitation', 'Dr. Adams',
5, 60, 3000.00, 'Successful'),

(6, 'Mental Health Awareness', '2025-06-01', '2025-06-10', 'Psychology', 'Dr.
Allen', 6, 45, 7000.00, 'Completed'),

(7, 'Epidemiology Basics', '2025-07-01', '2025-07-15', 'Epidemiology', 'Dr.
Davis', 7, 35, 9000.00, 'Successful'),

(8, 'Maternal Care', '2025-08-01', '2025-08-20', 'Maternal Health', 'Dr. Wilson',
8, 20, 4000.00, 'Ongoing'),

(9, 'Field Surgery', '2025-09-01', '2025-09-10', 'Surgery', 'Dr. Thomas', 9, 15,
15000.00, 'Completed'),
```

```
(10, 'Nutrition Education', '2025-10-01', '2025-10-15', 'Nutrition', 'Dr. Green',
10, 50, 5000.00, 'Successful');

#queries:

select * from training_programs;

SELECT training_name,participants FROM training_programs WHERE
budget>6000;

SELECT country_id,AVG(participants) FROM training_programs GROUP BY
country_id;

UPDATE training_programs SET outcome='Extended' WHERE training_id=8;

DELETE FROM training_programs WHERE participants<20;

ALTER TABLE training_programs ADD COLUMN sponsor VARCHAR(100);

SELECT topic,COUNT(*) FROM training_programs GROUP BY topic;

SELECT MAX(budget) AS max_budget FROM training_programs;

SELECT topic,AVG(budget) FROM training_programs GROUP BY topic HAVING
AVG(budget)>6000;

SELECT training_name,end_date-start_date AS duration FROM
training_programs;
```

```
#===============================================================
================================================================
=

-- 21. Participants

CREATE TABLE participants (

    participant_id INT PRIMARY KEY,

    training_id INT,
```

```sql
    name VARCHAR(100),

    gender CHAR(1),

    age INT,

    country_id INT,

    email VARCHAR(100),

    phone VARCHAR(20),

    role VARCHAR(50),

    remarks TEXT,

    FOREIGN KEY (training_id) REFERENCES training_programs(training_id),

    FOREIGN KEY (country_id) REFERENCES countries(country_id)
);


INSERT INTO participants (participant_id, training_id, name, gender, age,
country_id, email, phone, role, remarks) VALUES

(1, 101, 'John Smith', 'M', 34, 1, 'john.smith@example.com', '+1234567890',
'Doctor', 'Excellent engagement'),

(2, 102, 'Maria Garcia', 'F', 29, 2, 'maria.garcia@example.com', '+9876543210',
'Nurse', 'Quick learner'),

(3, 103, 'Ali Khan', 'M', 40, 3, 'ali.khan@example.com', '+1122334455',
'Coordinator', 'Needs improvement in time management'),

(4, 101, 'Linda Johnson', 'F', 35, 4, 'linda.j@example.com', '+4433221100',
'Health Worker', 'Very dedicated'),

(5, 102, 'Chen Wei', 'M', 28, 5, 'chen.wei@example.com', '+5566778899',
'Researcher', 'Strong analytical skills'),

(6, 103, 'Fatima Noor', 'F', 32, 6, 'fatima.noor@example.com', '+9988776655',
'Trainer', 'Highly interactive'),
```

(7, 101, 'James Brown', 'M', 38, 7, 'james.brown@example.com',
'+6677889900', 'Data Analyst', 'Good with statistics'),

(8, 102, 'Sofia Rossi', 'F', 30, 8, 'sofia.rossi@example.com', '+3344556677',
'Consultant', 'Provides innovative ideas'),

(9, 103, 'Omar Abdullah', 'M', 45, 9, 'omar.abdullah@example.com',
'+2211334455', 'Field Officer', 'Excellent leadership'),

(10, 101, 'Emily Davis', 'F', 27, 10, 'emily.davis@example.com', '+7788990011',
'Technician', 'Fast learner');

#queries:

```sql
select * from participants;

SELECT name,age,role FROM participants WHERE role='Doctor';

SELECT training_id,COUNT(*) FROM participants GROUP BY training_id;

UPDATE participants SET remarks='Excellent' WHERE participant_id=5;

DELETE FROM participants WHERE role='Technician';

ALTER TABLE participants ADD COLUMN attendance VARCHAR(20);

SELECT gender,COUNT(*) FROM participants GROUP BY gender;

SELECT MAX(age) AS oldest FROM participants;

SELECT role,AVG(age) FROM participants GROUP BY role HAVING
AVG(age)>30;

SELECT name,email FROM participants WHERE email LIKE '%example.com';
```

#==
==
=

-- 22. Emergency_Responses

```sql
CREATE TABLE emergency_responses (

    response_id INT PRIMARY KEY,

    disaster_type VARCHAR(100),

    country_id INT,

    start_date DATE,

    end_date DATE,

    affected_population INT,

    relief_funds DECIMAL(15,2),

    coordinator VARCHAR(100),

    response_team TEXT,

    outcome TEXT,

    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);


INSERT INTO emergency_responses (response_id, disaster_type, country_id,
start_date, end_date, affected_population, relief_funds, coordinator,
response_team, outcome) VALUES

(1, 'Flood', 1, '2023-02-10', '2023-03-15', 50000, 2500000.00, 'Mark Evans',
'Team A', 'Rescue operations successful'),

(2, 'Earthquake', 2, '2023-06-05', '2023-07-01', 120000, 5000000.00, 'Sara Ali',
'Team B', 'Reconstruction ongoing'),

(3, 'Cyclone', 3, '2023-09-12', '2023-10-10', 80000, 3000000.00, 'David Lee',
'Team C', 'Most victims relocated'),

(4, 'Pandemic', 4, '2020-03-01', '2022-01-31', 2000000, 15000000.00, 'Rita
Gomez', 'Team D', 'Vaccination campaign completed'),
```

```sql
(5, 'Wildfire', 5, '2023-04-20', '2023-05-15', 30000, 2000000.00, 'Tom Wright',
'Team E', 'Fire contained'),

(6, 'Tsunami', 6, '2022-12-05', '2023-01-20', 150000, 8000000.00, 'Priya Kumar',
'Team F', 'Relief distributed'),

(7, 'Landslide', 7, '2023-07-18', '2023-08-05', 25000, 1200000.00, 'Ahmed
Hassan', 'Team G', 'Rescue completed'),

(8, 'Drought', 8, '2023-01-01', '2023-12-31', 100000, 4000000.00, 'Elena
Petrova', 'Team H', 'Water supply restored'),

(9, 'Chemical Spill', 9, '2023-10-25', '2023-11-10', 5000, 900000.00, 'George
Wilson', 'Team I', 'Area decontaminated'),

(10, 'Hurricane', 10, '2023-08-15', '2023-09-05', 70000, 3500000.00, 'Isabella
Cruz', 'Team J', 'Rehabilitation in progress');

#queries:

select * from emergency_responses;

SELECT disaster_type,affected_population FROM emergency_responses
WHERE relief_funds>3000000;

SELECT country_id,SUM(relief_funds) FROM emergency_responses GROUP BY
country_id;

UPDATE emergency_responses SET outcome='Ongoing Support' WHERE
response_id=9;

DELETE FROM emergency_responses WHERE affected_population<10000;

ALTER TABLE emergency_responses ADD COLUMN priority_level
VARCHAR(20);

SELECT disaster_type,COUNT(*) FROM emergency_responses GROUP BY
disaster_type;

SELECT MAX(affected_population) AS worst_case FROM
emergency_responses;
```

```sql
SELECT disaster_type,AVG(relief_funds) FROM emergency_responses GROUP
BY disaster_type HAVING AVG(relief_funds)>2000000;

SELECT response_id,end_date-start_date AS duration FROM
emergency_responses;


#================================================================
================================================================
======


-- 23. WHO_Staff
CREATE TABLE who_staff (
    staff_id INT PRIMARY KEY,
    first_name VARCHAR(50),
    last_name VARCHAR(50),
    gender CHAR(1),
    job_title VARCHAR(100),
    department VARCHAR(100),
    country_id INT,
    phone VARCHAR(20),
    email VARCHAR(100),
    salary DECIMAL(12,2),
    FOREIGN KEY (country_id) REFERENCES countries(country_id)
);
```

```sql
INSERT INTO who_staff (staff_id, first_name, last_name, gender, job_title,
department, country_id, phone, email, salary) VALUES

(1, 'Michael', 'Scott', 'M', 'Director', 'Management', 1, '+123456789',
'm.scott@who.int', 95000.00),

(2, 'Pam', 'Beesly', 'F', 'Coordinator', 'Programs', 2, '+987654321',
'p.beesly@who.int', 65000.00),

(3, 'Jim', 'Halpert', 'M', 'Analyst', 'Data', 3, '+112233445', 'j.halpert@who.int',
72000.00),

(4, 'Dwight', 'Schrute', 'M', 'Supervisor', 'Logistics', 4, '+556677889',
'd.schrute@who.int', 70000.00),

(5, 'Angela', 'Martin', 'F', 'Accountant', 'Finance', 5, '+998877665',
'a.martin@who.int', 68000.00),

(6, 'Stanley', 'Hudson', 'M', 'Trainer', 'Capacity Building', 6, '+667788990',
's.hudson@who.int', 66000.00),

(7, 'Kelly', 'Kapoor', 'F', 'PR Officer', 'Communications', 7, '+334455667',
'k.kapoor@who.int', 64000.00),

(8, 'Ryan', 'Howard', 'M', 'IT Officer', 'Technology', 8, '+221133445',
'r.howard@who.int', 70000.00),

(9, 'Toby', 'Flenderson', 'M', 'HR Manager', 'Human Resources', 9,
'+778899001', 't.flenderson@who.int', 75000.00),

(10, 'Erin', 'Hannon', 'F', 'Assistant', 'Administration', 10, '+445566778',
'e.hannon@who.int', 60000.00);
```

#queries:

select * from who_staff;

SELECT first_name,last_name,job_title FROM who_staff WHERE gender='F';

SELECT department,AVG(salary) AS avg_salary FROM who_staff GROUP BY
department;

```sql
SELECT country_id,COUNT(staff_id) AS total_staff FROM who_staff GROUP BY country_id;

SELECT * FROM who_staff ORDER BY salary DESC LIMIT 3;

UPDATE who_staff SET salary=salary+5000 WHERE job_title='Analyst';

DELETE FROM who_staff WHERE last_name='Howard';

ALTER TABLE who_staff ADD COLUMN hire_date DATE DEFAULT '2020-01-01';

SELECT job_title,MAX(salary) FROM who_staff GROUP BY job_title;

SELECT department,COUNT(staff_id) FROM who_staff GROUP BY department HAVING COUNT(staff_id)>1;


#===============================================================================================================================
=======
-- 24. Reports
CREATE TABLE reports (
    report_id INT PRIMARY KEY,
    title VARCHAR(150),
    author VARCHAR(100),
    country_id INT,
    publish_date DATE,
    category VARCHAR(50),
    summary TEXT,
    file_url VARCHAR(200),
    pages INT,
    language VARCHAR(50),
```

```sql
    FOREIGN KEY (country_id) REFERENCES countries(country_id)

);


INSERT INTO reports (report_id, title, author, country_id, publish_date, category, summary, file_url, pages, language) VALUES

(1, 'Global Health Overview 2023', 'WHO Editorial', 1, '2023-01-15', 'Annual Report', 'Summary of global health indicators.', 'http://who.int/reports/2023overview.pdf', 120, 'English'),

(2, 'Vaccination Progress', 'Dr. Sarah Lee', 2, '2023-03-10', 'Vaccination', 'Updates on vaccination campaigns.', 'http://who.int/reports/vaccine2023.pdf', 80, 'English'),

(3, 'Pandemic Preparedness', 'John Carter', 3, '2023-05-20', 'Emergency', 'Guidelines for pandemic readiness.', 'http://who.int/reports/pandemic2023.pdf', 150, 'English'),

(4, 'Water Sanitation', 'Mary Johnson', 4, '2023-07-01', 'Sanitation', 'Improving water sanitation systems.', 'http://who.int/reports/water2023.pdf', 100, 'French'),

(5, 'Child Health', 'Fatima Noor', 5, '2023-09-05', 'Child Care', 'Report on global child health.', 'http://who.int/reports/child2023.pdf', 90, 'English'),

(6, 'Mental Health Awareness', 'James Smith', 6, '2023-10-12', 'Mental Health', 'Raising awareness for mental health.', 'http://who.int/reports/mental2023.pdf', 70, 'English'),

(7, 'Nutrition Trends', 'Olivia Brown', 7, '2023-08-15', 'Nutrition', 'Tracking dietary habits globally.', 'http://who.int/reports/nutrition2023.pdf', 60, 'Spanish'),

(8, 'Disease Surveillance', 'David Chen', 8, '2023-04-18', 'Epidemiology', 'Monitoring disease outbreaks.', 'http://who.int/reports/disease2023.pdf', 85, 'English'),
```

```
(9, 'Air Quality Analysis', 'Elena Petrova', 9, '2023-02-22', 'Environment',
'Assessing global air quality.', 'http://who.int/reports/air2023.pdf', 95,
'Russian'),

(10, 'Global Immunization Review', 'George Wilson', 10, '2023-06-28',
'Vaccination', 'Immunization progress worldwide.',
'http://who.int/reports/immunization2023.pdf', 110, 'English');

#queries:

select * from reports;

SELECT title,author,publish_date FROM reports WHERE category='Vaccination';

SELECT category,COUNT(report_id) AS total_reports FROM reports GROUP BY
category;

SELECT country_id,AVG(pages) AS avg_pages FROM reports GROUP BY
country_id;

SELECT * FROM reports ORDER BY publish_date DESC LIMIT 5;

UPDATE reports SET language='French' WHERE report_id=5;

DELETE FROM reports WHERE category='Nutrition';

ALTER TABLE reports ADD COLUMN reviewed_by VARCHAR(100);

SELECT language,COUNT(report_id) FROM reports GROUP BY language;

SELECT category,MAX(pages) FROM reports GROUP BY category HAVING
MAX(pages)>100;
```

#==
==
=

-- 25. Global_Statistics

CREATE TABLE global_statistics (

```sql
    stat_id INT PRIMARY KEY,

    year INT,

    global_population BIGINT,

    global_life_expectancy DECIMAL(5,2),

    global_health_budget DECIMAL(15,2),

    total_disease_cases BIGINT,

    total_vaccinations BIGINT,

    global_death_rate DECIMAL(5,2),

    top_disease VARCHAR(100),

    remarks TEXT

);

INSERT INTO global_statistics (stat_id, year, global_population, global_life_expectancy, global_health_budget, total_disease_cases, total_vaccinations, global_death_rate, top_disease, remarks) VALUES

(1, 2015, 7400000000, 71.5, 8000000000.00, 500000000, 3000000000, 7.5, 'Malaria', 'Steady improvements in healthcare'),

(2, 2016, 7500000000, 71.8, 8200000000.00, 490000000, 3100000000, 7.4, 'Tuberculosis', 'Better vaccination coverage'),

(3, 2017, 7600000000, 72.0, 8400000000.00, 480000000, 3200000000, 7.3, 'HIV/AIDS', 'Awareness programs increasing'),

(4, 2018, 7700000000, 72.3, 8600000000.00, 470000000, 3300000000, 7.2, 'Influenza', 'New vaccines introduced'),

(5, 2019, 7800000000, 72.6, 8800000000.00, 460000000, 3400000000, 7.1, 'COVID-19', 'Initial outbreak phase'),

(6, 2020, 7900000000, 72.0, 9000000000.00, 1000000000, 3500000000, 7.9, 'COVID-19', 'Pandemic peak'),
```

(7, 2021, 8000000000, 72.4, 9200000000.00, 800000000, 3600000000, 7.6, 'COVID-19', 'Mass vaccination campaigns'),

(8, 2022, 8100000000, 72.8, 9400000000.00, 600000000, 3700000000, 7.2, 'Influenza', 'Post-pandemic recovery'),

(9, 2023, 8200000000, 73.1, 9600000000.00, 550000000, 3800000000, 7.0, 'Malaria', 'Focus on tropical diseases'),

(10, 2024, 8300000000, 73.4, 9800000000.00, 530000000, 3900000000, 6.9, 'Tuberculosis', 'Improved medical access');

#queries:]

select * from global_statistics;

SELECT year,global_population,global_life_expectancy FROM global_statistics WHERE year>=2020;

SELECT AVG(global_life_expectancy) AS avg_life FROM global_statistics;

SELECT year,total_vaccinations,total_disease_cases FROM global_statistics ORDER BY year;

SELECT top_disease,COUNT(stat_id) FROM global_statistics GROUP BY top_disease;

UPDATE global_statistics SET remarks='Updated Data' WHERE year=2019;

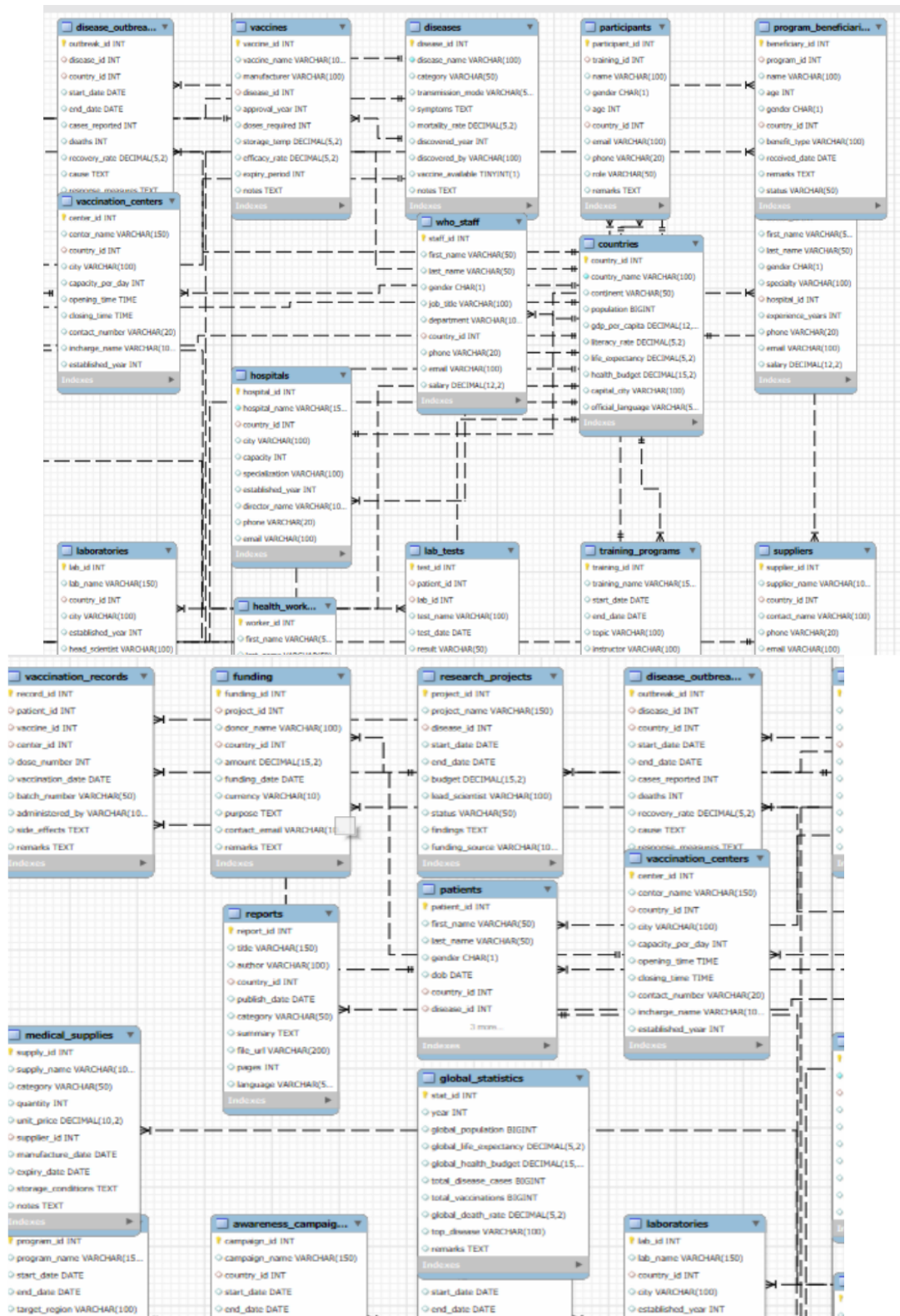DELETE FROM global_statistics WHERE year=2015;

ALTER TABLE global_statistics ADD COLUMN data_verified BOOLEAN DEFAULT TRUE;

SELECT year,global_death_rate FROM global_statistics WHERE global_death_rate>7.5;

SELECT * FROM global_statistics ORDER BY global_life_expectancy DESC LIMIT 1;

RELATIONSHIP OF WHO

- One **country** can have many **hospitals, patients, vaccination centers, laboratories, campaigns, health programs, and fundings**.
- One **hospital** can have many **doctors, patients, appointments, and surgeries**.
- One **doctor** can treat many **patients**, write many **prescriptions**, and perform many **surgeries**.
- One **patient** can have many **appointments, lab tests, vaccination records, prescriptions, and surgeries**.
- One **disease** can affect many **patients**, have many **vaccines**, and many **research projects**.
- One **research project** can have many **fundings**.

Queries in SQL:

A **query** means asking the database to do something. It may be creating, inserting, updating, deleting, or retrieving data.
Queries are divided into different types:

DDL (Data Definition Language):

Used to **define and change the structure** of tables and databases.

Example:

- **CREATE** → Create new tables or databases.
- **ALTER** → Modify structure of a table (add/drop/rename column).
- **DROP** → Delete a table or database.
- **TRUNCATE** → Remove all records from a table quickly.

 Example (Healthcare Project):

1.create:

CREATE TABLE countries (

```
  country_id INT PRIMARY KEY,

  country_name VARCHAR(100) NOT NULL,

);
```

2.alter:

Alter table countries add column age int not null;

3.drop

Drop table countries;

4.truncate:

Truncate table countries;

DML (Data Manipulation Language):

Used to **work with data inside tables** (insert, update, delete records).

Examples:

- **INSERT** → Add new data.
- **UPDATE** → Change existing data.
- **DELETE** → Remove data.

 Example:

1.INSERT :

Insert into patients (patient_id, name, age, gender, city)

VALUES (1, 'Ravi Kumar', 35, 'Male', 'Hyderabad');

2.Update:

UPDATE patients

SET city = 'Delhi'

WHERE patient_id = 1;

3Delete:

Delete from patients

where patient_id = 1;

DQL (Data Query Language):

 Used to **retrieve data** (only SELECT is here).

Examples:

   SELECT → Fetch data from tables.

   With **WHERE**, **ORDER BY**, **GROUP BY**, **HAVING**, **LIMIT**.

Select:

SELECT * FROM patients;

SELECT name, age

FROM patients

WHERE city = 'Hyderabad';

SELECT city, COUNT(*) AS total_patients   FROM patients GROUP BY city;

Analysis:

The Healthcare System database is very useful in real life. It helps hospitals and clinics keep all information in one place. Patient records, doctor schedules, lab tests, medicines, insurance, and awareness campaigns can be managed easily.

For example:

- A hospital can quickly check a patient's history and medicines.
- Doctors' appointments can be tracked without confusion.
- Lab results can be connected with patients and doctors.
- Reports like "number of patients in each country" or "budget of health campaigns" can be generated in seconds.

This makes the healthcare system more organized, faster, and reliable.

Reflection

While making this project, I faced some problems but I solved them step by step.

- **Challenge 1**: Sometimes my `INSERT` queries gave errors because the column order was not correct.
  Solution: I solved it by always writing column names before inserting values.
- **Challenge 2**: It was difficult to design relationships between many tables.
  Solution: I made small tables first, then slowly connected them with primary keys and foreign keys.
- **Challenge 3**: The ER diagram was confusing at first.
  Solution: I used simple shapes and step-by-step connections to show how patients, doctors, hospitals, and other tables are related.

Because of these steps, I was able to complete my database project successfully.