-- Task 2: Student Database Management System (PostgreSQL)

-- Step 1: Database Setup

-- Create a database named "student\_database"

-- Create the "student\_table" with columns

CREATE TABLE student\_table (

Student\_id SERIAL PRIMARY KEY,

Stu\_name VARCHAR(100),

Department TEXT,

email\_id TEXT,

Phone\_no NUMERIC,

Address TEXT,

Date\_of\_birth DATE,

Gender TEXT,

Major TEXT,

GPA NUMERIC,

Grade CHAR(1)

);

-- Step 2: Data Entry

-- Insert 10 sample records into the "student\_table"

INSERT INTO student\_table (Stu\_name, Department, email\_id, Phone\_no, Address, Date\_of\_birth, Gender, Major, GPA, Grade)

VALUES

('Rahul Kumar', 'Computer Science', 'rahul@example.com', 9876543210, '123 Main St, Delhi', '1999-04-15', 'Male', 'Computer Science', 8.2, 'A'),

('Priya Sharma', 'Electrical Engineering', 'priya@example.com', 7890123456, '456 Elm St, Mumbai', '2000-07-22', 'Female', 'Electrical Engineering', 7.5, 'B'),

('Amit Verma', 'Mechanical Engineering', 'amit@example.com', 9876543211, '789 Oak St, Chennai', '1998-12-10', 'Male', 'Mechanical Engineering', 6.8, 'C'),

('Sneha Gupta', 'Computer Science', 'sneha@example.com', 7890123457, '567 Pine St, Kolkata', '2000-01-30', 'Female', 'Computer Science', 7.9, 'B'),

('Avinash Singh', 'Civil Engineering', 'avinash@example.com', 9876543212, '890 Cedar St, Bangalore', '1999-09-05', 'Male', 'Civil Engineering', 7.2, 'C'),

('Anjali Patel', 'Electrical Engineering', 'anjali@example.com', 7890123458, '234 Birch St, Mumbai', '2001-03-12', 'Female', 'Electrical Engineering', 8.7, 'A'),

('Vikas Pandey', 'Computer Science', 'vikas@example.com', 9876543213, '345 Redwood St, Chennai', '1999-06-18', 'Male', 'Computer Science', 7.1, 'C'),

('Neha Yadav', 'Mechanical Engineering', 'neha@example.com', 7890123459, '456 Walnut St, Delhi', '2000-04-05', 'Female', 'Mechanical Engineering', 8.4, 'A'),

('Rajat Jain', 'Civil Engineering', 'rajat@example.com', 9876543214, '678 Maple St, Pune', '1998-08-20', 'Male', 'Civil Engineering', 6.5, 'D'),

('Monika Mishra', 'Electrical Engineering', 'monika@example.com', 7890123460, '789 Birch St, Bangalore', '2000-11-08', 'Female', 'Electrical Engineering', 7.7, 'C');

-- Step 3: Student Information Retrieval

-- Retrieve all students' information and sort them in descending order by their grade

SELECT \*

FROM student\_table

ORDER BY Grade DESC;

-- Step 4: Query for Male Students

-- Retrieve information about all male students

SELECT \*

FROM student\_table

WHERE Gender = 'Male';

-- Step 5: Query for Students with GPA less than 5.0

-- Fetch the details of students with GPA less than 5.0

SELECT \*

FROM student\_table

WHERE GPA < 5.0;

-- Step 6: Update Student Email and Grade

-- Modify the email and grade of a student with a specific ID

UPDATE student\_table

SET email\_id = 'updated\_email@example.com', Grade = 'B'

WHERE Student\_id = 2;

-- Step 7: Query for Students with Grade "B"

-- Retrieve the names and ages of students with a grade of "B"

SELECT Stu\_name, AGE(Date\_of\_birth) AS Age

FROM student\_table

WHERE Grade = 'B';

-- Step 8: Grouping and Calculation

-- Group by "Department" and "Gender" and calculate the average GPA for each combination

SELECT Department, Gender, AVG(GPA) AS Average\_GPA

FROM student\_table

GROUP BY Department, Gender;

-- Step 9: Table Renaming

-- Rename the "student\_table" to "student\_info"

ALTER TABLE student\_table RENAME TO student\_info;

-- Step 10: Retrieve Student with Highest GPA

-- Query to retrieve the name of the student with the highest GPA

SELECT Stu\_name, GPA

FROM student\_info

ORDER BY GPA DESC

LIMIT 1;