**/\*Project: Student Database Management System (PostgreSQL)**

**Objective: Design and implement a student database management system using PostgreSQL that allows storing and retrieving student information efficiently. The project will include the following tasks:**

**1. Database Setup**

**Create a database named "student\_database."**

**Create a table called " student\_table" with the following columns: Student\_id (integer), Stu\_name (text), Department (text), email\_id (text), Phone\_no (numeric), Address (text), Date\_of\_birth (date), Gender (text), Major (text), GPA (numeric), Grade (text) should be A,B,C etc.**

**\*/**

CREATE TABLE student\_table (

student\_id SERIAL PRIMARY KEY, -- Auto-incrementing primary key

stu\_name TEXT NOT NULL, -- Student's name (cannot be null)

department TEXT, -- Department (optional)

email\_id TEXT UNIQUE, -- Email address (must be unique)

phone\_no VARCHAR(15), -- Phone number (allows for formatting)

address TEXT, -- Address (optional)

date\_of\_birth DATE, -- Date of birth

gender TEXT CHECK (gender IN ('Male', 'Female', 'Other')), -- Gender with allowed values

major TEXT, -- Major (optional)

gpa NUMERIC(3, 2), -- GPA

grade CHAR(1) CHECK (grade IN ('A', 'B', 'C', 'D', 'E', 'F')) -- Grade with allowed values

);

**-- 2. Data Entry**

**Insert 10 sample records into the "student\_table" using INSERT command.**

INSERT INTO student\_table (stu\_name, department, email\_id, phone\_no, address, date\_of\_birth, gender, major, gpa, grade)

VALUES

('`Jaffer`', 'Computer Science', 'Jaffer@orkut.com', '2343454567', 'Ranji street', '1987-03-15', 'Male', 'Software Engineering', 9.05, 'A'),

('Shewag', 'Mathematics', 'Vshewag319@facebook.com', '3192972191', 'Delhi daredevils St', '1984-07-22', 'Male', 'Applied Mathematics', 8.40, 'B'),

('Rahul Dravid', 'Economics', 'Jammy@indianwall.com', '9871112312', 'India cements road', '1986-02-18', 'Male', 'International Economics', 8.20, 'B'),

('Sachin Tendulkar', 'Biology', 'Littlemaster@God.com', '1001001001', 'Mumbai maidan St', '1988-11-30', 'Male', 'Molecular Biology', 5.70, 'D'),

('Sourav Ganguly', 'Physics', 'Dadagiri@Kolkatha.com', '4567890123', 'Eden gardens', '2000-06-10', 'Male', 'Astrophysics', 7.40, 'C'),

('VVS Laxman', 'Chemistry', 'VVS@Hyderabad.com', '5678901234', 'VVS St', '1990-09-05', 'Male', 'Organic Chemistry', 8.70, 'B'),

('MS Dhoni', 'Engineering', 'Thala@captaincool.com', '7777777777', 'Chepauk stadium', '1987-07-07', 'Male', 'Civil Engineering', 9.20, 'A'),

('Harbajan Singh', 'History', 'Singh@Punjab.com', '8901234567', 'Punjabi St', '2000-10-14', 'Male', 'Modern History', 4.60, 'E'),

('Zaheer Khan', 'Philosophy', 'Newball@mumbai.com', '9012345678', 'LSG admin St', '1987-01-09', 'Male', 'Ethics', 7.90, 'C'),

('Sreeshanth', 'Psychology', 'RRR@Kerala.com', '1123456789', 'KXIP St', '2000-08-27', 'Male', 'Clinical Psychology', 8.80, 'B');

SELECT \* FROM student\_table;

**-- 3. Student Information Retrieval**

**Develop a query to retrieve all students' information from the "student\_table" and sort them in descending order by their grade.**

SELECT \*

FROM student\_table

ORDER BY grade ASC;

**4. Query for Male Students:**

**Implement a query to retrieve information about all male students from the "student\_table."**

SELECT \*

FROM student\_table

WHERE gender = 'Male';

**/\* 5. Query for Students with GPA less than 5.0**

**Create a query to fetch the details of students who have a GPA less than 5.0 from the "student\_table." \*/**

SELECT \*

FROM student\_table

WHERE gpa < 5.0;

**/\* 6. Update Student Email and Grade**

**Write an update statement to modify the email and grade of a student with a specific ID in the "student\_table." \*/**

UPDATE student\_table

SET email\_id = 'FormerIndiaplayer@ICC.com',

grade = 'B',

gpa = '8.90' **-- Also changed gpa as B grade should be between 9-8.5 (Previously the student had it was 9.05)**

WHERE student\_id = 1;

**-- to show the changes**

SELECT \*

FROM student\_table

WHERE student\_id = 1;

**/\* 7. Query for Students with Grade "B"**

**Develop a query to retrieve the names and ages of all students who have a grade of "B" from the "student\_table." \*/**

SELECT stu\_name,

EXTRACT(YEAR FROM AGE(date\_of\_birth)) AS age

FROM student\_table

WHERE grade = 'B';

**/\* 8. Grouping and Calculation**

**Create a query to group the "student\_table" by the "Department" and "Gender" columns and calculate the average GPA for each combination. \*/**

SELECT department,

gender,

ROUND(AVG(gpa), 2) AS average\_gpa

FROM student\_table

GROUP BY department, gender

ORDER BY department, gender;

**/\* 9. Table Renaming**

**Rename the "student\_table" to "student\_info" using the appropriate SQL statement. \*/**

ALTER TABLE student\_table

RENAME TO student\_info;

**/\* 10. Retrieve Student with Highest GPA**

**Write a query to retrieve the name of the student with the highest GPA from the "student\_info" table. \*/**

SELECT stu\_name

FROM student\_info

ORDER BY GPA DESC

LIMIT 1;