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 TABLE student\_table (

Student\_id INTEGER PRIMARY KEY, Stu\_name TEXT NOT NULL, Department TEXT, email\_id TEXT, Phone\_no NUMERIC, Address TEXT, Date\_of\_birth DATE, Gender TEXT, Major TEXT, GPA NUMERIC,

Grade TEXT CHECK (Grade IN ('A', 'B', 'C', 'D', 'F')) );

-- Create the table

CREATE TABLE student\_table (

Student\_id INTEGER PRIMARY KEY, Stu\_name TEXT NOT NULL, Department TEXT,

email\_id TEXT, Phone\_no NUMERIC, Address TEXT, Date\_of\_birth DATE, Gender TEXT,

Major TEXT, GPA NUMERIC, Grade TEXT CHECK (Grade IN ('A', 'B', 'C', 'D', 'F'))

);

2)  *Data Entry*

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

(1, 'Anil Kumar', 'Computer Engineering', 'anil.kumar@example.com', 1111111111, '123, MG Road, Anna Nagar, Chennai', '1995-02-14', 'Male', 'Computer Science', 3.8, 'A'),

(2, 'Beena Menon', 'Electrical Engineering', 'beena.menon@example.com', 1111111111, '456, Park Street, T. Nagar, Chennai', '1996-03-25', 'Female', 'Electrical Engineering', 3.6, 'B'),

(3, 'Chetan Nair', 'Mechanical Engineering', 'chetan.nair@example.com', 1111111111, '789, Gandhi Street, Velachery, Chennai', '1995-07-19', 'Male', 'Mechanical Engineering', 3.5, 'B'),

(4, 'Divya Pillai', 'Civil Engineering', 'divya.pillai@example.com', 1111111111, '321, Rajaji Road, Adyar, Chennai', '1996-01-30', 'Female', 'Civil Engineering', 3.9, 'A'),

(5, 'Ebin Mathew', 'Electronics Engineering', 'ebin.mathew@example.com', 1111111111, '654, Nehru Street, Saidapet, Chennai', '1994-12-12', 'Male', 'Electronics and Communication', 3.7, 'B'),

(6, 'Fathima Raj', 'Computer Engineering', 'fathima.raj@example.com', 1111111111, '987, Mount Road, Guindy, Chennai', '1997-04-22', 'Female', 'Computer Science', 3.8, 'A'),

(7, 'George Thomas', 'Electrical Engineering', 'george.thomas@example.com', 1111111111, '246, Anna Salai, Nungambakkam, Chennai', '1995-06-16', 'Male', 'Electrical Engineering', 3.4, 'C'),

(8, 'Hema Varma', 'Mechanical Engineering', 'hema.varma@example.com', 1111111111, '135, Poonamallee High Road, Kilpauk, Chennai', '1996-08-28', 'Female', 'Mechanical Engineering', 3.6, 'B'),

(9, 'Irfan Khan', 'Civil Engineering', 'irfan.khan@example.com', 1111111111, '864, ECR Road, Thiruvanmiyur, Chennai', '1997-11-11', 'Male', 'Civil Engineering', 3.9, 'A'),

(10, 'Jaya Iyer', 'Electronics Engineering', 'jaya.iyer@example.com', 1111111111, '579, OMR Road, Perungudi, Chennai', '1994-09-05', 'Female', 'Electronics and Communication', 3.7, 'B');

3) Data retrieval

SELECT \* FROM student\_table ORDER BY Grade DESC;

4) *. Query for Male Students:*

SELECT \* FROM student\_table WHERE Gender = 'Male';

5) *Query for Students with GPA less than 5.0*

SELECT \* FROM student\_table WHERE GPA < 5.0;

6)  *Update Student Email and Grade*

UPDATE student\_table

SET email\_id = 'updated.beena.menon@example.com', Grade = 'A'

WHERE Student\_id = 2;

*7)* *Query for Students with Grade "B"*

SELECT Stu\_name, DATE\_PART('year', AGE(Date\_of\_birth)) AS Age FROM student\_table

WHERE Grade = 'B';

8) *Grouping and Calculation*

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

GROUP BY Department, Gender;

9)*. Table Renaming*

ALTER TABLE student\_table RENAME TO student\_info;

10) *Retrieve Student with Highest GPA*

*SELECT Stu\_name , GPA FROM student\_info*

*ORDER BY GPA DESC*

*LIMIT 1;*