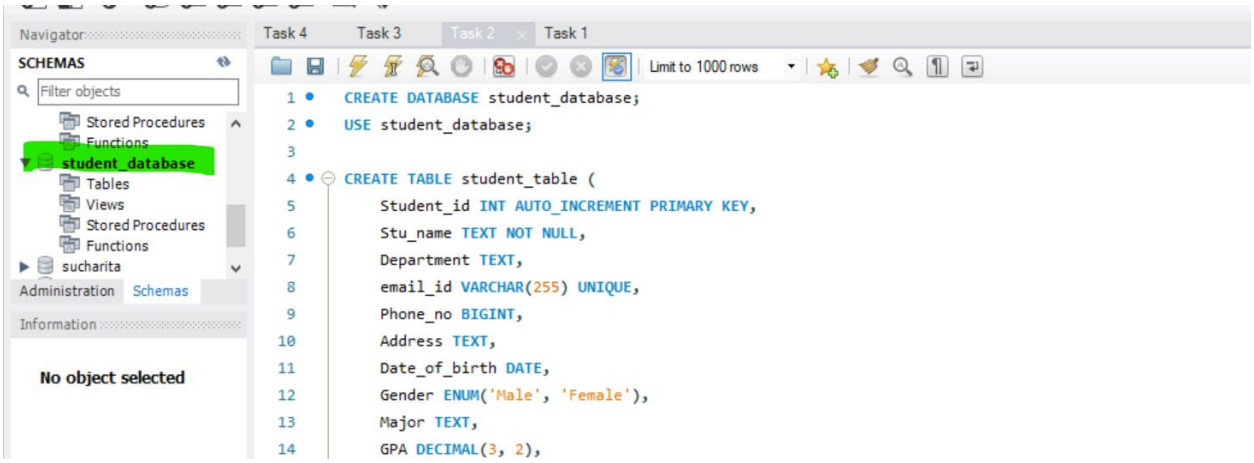
QUERY SHEET

Project: Student Database Management System(MySQL)
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 INT AUTO_INCREMENT PRIMARY KEY,
    Stu_name TEXT NOT NULL,
    Department TEXT,
    email_id VARCHAR(255) UNIQUE,
    Phone_no BIGINT,
    Address TEXT,
    Date_of_birth DATE,
    Gender ENUM('Male', 'Female'),
    Major TEXT,
    GPA DECIMAL(3, 2),
    Grade ENUM('A', 'B', 'C', 'D', 'F')
);
select * from student_table;
```

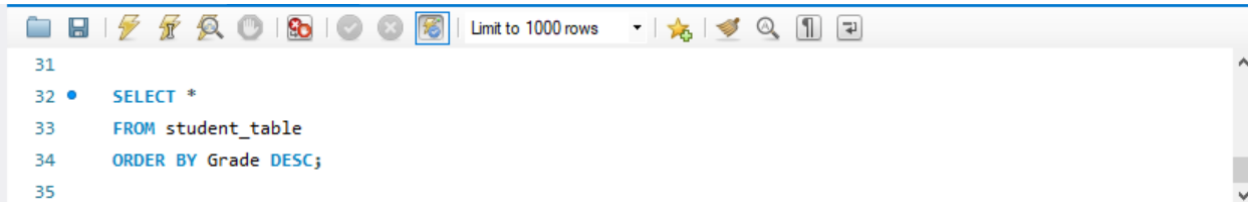
2. Data Entry

Insert 10 sample records into the "student_table" using INSERT command.

```
18
19 •  INSERT INTO student_table (Stu_name, Department, email_id, Phone_no, Address, Date_of_birth, Gender, Major
20    VALUES
21    ('Sucharita', 'Computer Science', 'sucharita@example.com', 9876543210, 'New York', '2000-04-15', 'Female',
22    ('Madhuri', 'Mechanical Engineering', 'madhuri@example.com', 8765432109, 'Los Angeles', '2001-03-10', 'Fem
23    ('Ramana', 'Civil Engineering', 'ramana@example.com', 7654321098, 'Chicago', '1999-07-25', 'Male', 'Constr
24    ('Mamta', 'Computer Science', 'mamta@example.com', 6543210987, 'San Francisco', '2000-11-20', 'Female', 'D
25    ('Anish', 'Electrical Engineering', 'anish@example.com', 5432109876, 'Boston', '2001-05-30', 'Male', 'Circ
26    ('Prateek', 'Mechanical Engineering', 'prateek@example.com', 4321098765, 'Seattle', '2000-08-10', 'Male',
27    ('Suraj', 'Computer Science', 'suraj@example.com', 3210987654, 'Houston', '1998-12-25', 'Male', 'AI', 9.5,
28    ('Rejish', 'Civil Engineering', 'rejish@example.com', 2109876543, 'Phoenix', '1997-10-05', 'Male', 'Hydrau
29    ('Amul', 'Electrical Engineering', 'amul@example.com', 1098765432, 'Denver', '2002-02-15', 'Male', 'Power
30    ('Sujith', 'Mechanical Engineering', 'sujith@example.com', 1987654321, 'Austin', '2000-06-01', 'Male', 'De
```

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.



4. Query for Male Students:

.Implement a query to retrieve information about all male students from the "student_table."

```
36    -- Query for Male Students
37 •  SELECT *
38    FROM student_table
39    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."

```
41    -- Students with GPA less than 5.0
42 •  SELECT *
43    FROM student_table
44    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."

```sql
-- Update Student Email and Grade
UPDATE student_table
SET email_id = 'updatedemail@example.com', Grade = 'A'
WHERE Student_id = 5;
```

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."

```sql
-- Query for Students with Grade "B"
SELECT Stu_name, TIMESTAMPDIFF(YEAR, Date_of_birth, CURDATE()) 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.

```sql
-- Grouping and Calculation
SELECT Department, Gender, AVG(GPA) AS Avg_GPA
FROM student_table
GROUP BY Department, Gender;
```

9. Table Renaming
Rename the "student_table" to "student_info" using the appropriate SQL statement.

```sql
-- Table Renaming
RENAME TABLE student_table 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.

```sql
-- Retrieve Student with Highest GPA
SELECT Stu_name
FROM student_info
WHERE GPA = (SELECT MAX(GPA) FROM student_info);
```

FULL QUERY

1. Database Setup

a. Create the Database:

```
CREATE DATABASE student_database;

USE student_database;
```

b. Create the Table:

```
CREATE TABLE student_table (
    Student_id INT AUTO_INCREMENT PRIMARY KEY,
    Stu_name TEXT NOT NULL,
    Department TEXT,
    email_id VARCHAR(255) UNIQUE,
    Phone_no BIGINT,
    Address TEXT,
    Date_of_birth DATE,
    Gender ENUM('Male', 'Female'),
    Major TEXT,
    GPA DECIMAL(3, 2),
    Grade ENUM('A', 'B', 'C', 'D', 'F')
);

select * from student_table;
```

2. Data Entry

a. Insert Sample Records:

```
INSERT INTO student_table (Stu_name, Department, email_id, Phone_no, Address,
Date_of_birth, Gender, Major, GPA, Grade)
VALUES
```

('Sucharita', 'Computer Science', 'sucharita@example.com', 9876543210, 'New York', '2000-04-15', 'Female', 'AI', 8.5, 'A'),

('Madhuri', 'Mechanical Engineering', 'madhuri@example.com', 8765432109, 'Los Angeles', '2001-03-10', 'Female', 'Robotics', 7.0, 'B'),

('Ramana', 'Civil Engineering', 'ramana@example.com', 7654321098, 'Chicago', '1999-07-25', 'Male', 'Construction', 6.0, 'C'),

('Mamta', 'Computer Science', 'mamta@example.com', 6543210987, 'San Francisco', '2000-11-20', 'Female', 'Data Science', 9.0, 'A'),

('Anish', 'Electrical Engineering', 'anish@example.com', 5432109876, 'Boston', '2001-05-30', 'Male', 'Circuits', 5.5, 'B'),

('Prateek', 'Mechanical Engineering', 'prateek@example.com', 4321098765, 'Seattle', '2000-08-10', 'Male', 'Thermodynamics', 4.5, 'C'),

('Suraj', 'Computer Science', 'suraj@example.com', 3210987654, 'Houston', '1998-12-25', 'Male', 'AI', 9.5, 'A'),

('Rejish', 'Civil Engineering', 'rejish@example.com', 2109876543, 'Phoenix', '1997-10-05', 'Male', 'Hydraulics', 3.0, 'D'),

('Amul', 'Electrical Engineering', 'amul@example.com', 1098765432, 'Denver', '2002-02-15', 'Male', 'Power Systems', 8.0, 'B'),

('Sujith', 'Mechanical Engineering', 'sujith@example.com', 1987654321, 'Austin', '2000-06-01', 'Male', 'Design', 7.5, 'B');

3. Student Information Retrieval

--To Retrieve all student records sorted in descending order by grade

```
SELECT * FROM student_table

ORDER BY Grade DESC;
```

4. Query for Male Students

--To Retrieve information about male students:

```
SELECT * FROM student_table

WHERE Gender = 'Male';
```

5. Query for Students with GPA less than 5.0

```
--To Fetch details of students with GPA < 5.0
SELECT * FROM student_table
WHERE GPA < 5.0;
```

6. Update Student Email and Grade

```
--To Update email and grade of a specific student:
UPDATE student_table
SET email_id = 'updatedemail@example.com', Grade = 'A'
WHERE Student_id = 5; -- Replace with the actual Student_id
```

7. Query for Students with Grade "B"

```
-- Retrieve names and ages of students with grade "B"
SELECT Stu_name, TIMESTAMPDIFF(YEAR, Date_of_birth, CURDATE()) AS Age
FROM student_table
WHERE Grade = 'B';
```

8. Grouping and Calculation

```
-- Group by Department and Gender, and calculate average GPA
SELECT Department, Gender, AVG(GPA) AS Avg_GPA
FROM student_table
GROUP BY Department, Gender;
```

9. Table Renaming

```
-- Rename the table student_table to student_info
RENAME TABLE student_table TO student_info;
```

10. Retrieve Student with Highest GPA

```
-- Retrieve the name of the student with the highest GPA

SELECT Stu_name

FROM student_info

WHERE GPA = (SELECT MAX(GPA) FROM student_info);
```