Project 2

Title: Student Database Management System (SQL)

1. Database Setup

Question:

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.

Query:

```
CREATE DATABASE student_database;
USE student_database;
CREATE TABLE student_table (
Student_id INT PRIMARY KEY,
Stu_name TEXT NOT NULL,
Department TEXT NOT NULL,
email_id TEXT NOT NULL,
Phone_no NUMERIC NOT NULL,
Address TEXT,
Date_of_birth DATE,
Gender TEXT,
Major TEXT,
GPA NUMERIC (3,1),
Grade TEXT
);
```

2. Data Entry

Question:

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

Query:

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

VALUES

(1, 'Raji', 'Computer Science', 'Raji@gmail.com', 9876543210, '123 Elm Street', '2000-05-15', 'Female', 'CS', 3.8, 'B'),

(2, 'Mano', 'Mathematics', 'Mano@gmail.com', 9876543211, '456 Oak Avenue', '1999-08-25', 'Male', 'Math', 4.0, 'A'),

(3, 'Vaishnavi', 'Engineering', 'Vaishnavi@gmail.com', 9876543212, '789 Pine Lane', '2001-01-10', 'Female', 'ENG', 4.5, 'A'),

(4, 'Vijay', 'Engineering', 'Vijay@gmail.com', 9876543213, '321 Maple Road', '2000-12-05', 'Male', 'ENG', 2.8, 'C'),

(5, 'Saranya', 'Physics', 'Saranya@gmail.com', 9876543214, '654 Cedar Street', '2002-03-20', 'Female', 'PHY', 3.0, 'B'),

(6, 'Abinaya', 'Physics', 'Abinaya@gmail.com', 9876543215, '987 Birch Blvd', '1998-11-15', 'Female', 'PHY', 5.0, 'A'),

(7, 'Lohitha', 'Mathematics', 'Lohitha@gmail.com', 9876543216, '123 Oak Avenue', '2000-06-30', 'Female', 'Math', 4.2, 'A'),

(8, 'Frank', 'Biology', 'frank@gmail.com', 9876543217, '321 Elm Street', '1999-02-18', 'Male', 'BIO', 2.5, 'C'),

(9, 'Zahir', 'Chemistry', 'Zahir@gmail.com', 9876543218, '456 Maple Road', '1997-09-12', 'Male', 'CHE', 4.8, 'A'),

(10, 'Pradeep', 'Computer Science', 'Pradeep@gmail.com', 9876543219, '789 Cedar Street', '2001-07-25', 'Male', 'CS', 3.9, 'B');

3. Student Information Retrieval

Question:

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

Query:

```
SELECT *

FROM student_table

ORDER BY Grade DESC;
```

Output:

Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
4	Vijay	Engineering	Vijay@gmail.com	9876543213	321 Maple Road	2000-12-05	Male	ENG	2.8	C
8	Frank	Biology	frank@gmail.com	9876543217	321 Elm Street	1999-02-18	Male	BIO	2.5	C
1	Raji	Computer Science	Raji@gmail.com	9876543210	123 Elm Street	2000-05-15	Female	CS	3.8	B
5	Saranya	Physics	Saranya@gmail.com	9876543214	654 Cedar Street	2002-03-20	Female	PHY	3	B
10	Pradeep	Computer Science	Pradeep@gmail.com	9876543219	789 Cedar Street	2001-07-25	Male	CS	3.9	B
2	Mano	Mathematics	Mano@gmail.com	9876543211	456 Oak Avenue	1999-08-25	Male	Math	4	A
3	Vaishnavi	Engineering	Vaishnavi@gmail.com	9876543212	789 Pine Lane	2001-01-10	Female	ENG	4.5	A
6	Abinaya	Physics	Abinaya@gmail.com	9876543215	987 Birch Blvd	1998-11-15	Female	PHY	5	A
7	Lohitha	Mathematics	Lohitha@gmail.com	9876543216	123 Oak Avenue	2000-06-30	Female	Math	4.2	A
9	Zahir	Chemistry	Zahir@gmail.com	9876543218	456 Maple Road	1997-09-12	Male	CHE	4.8	A

4. Query for Male Students:

Question:

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

Query:

```
SELECT *

FROM student_table

WHERE Gender = 'Male';
```

Output:

Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grade
2	Mano	Mathematics	Mano@gmail.com	9876543211	456 Oak Avenue	1999-08-25	Male	Math	4.0	A
4	Vijay	Engineering	Vijay@gmail.com	9876543213	321 Maple Road	2000-12-05	Male	ENG	2.8	C
8	Frank	Biology	frank@gmail.com	9876543217	321 Elm Street	1999-02-18	Male	BIO	2.5	C
9	Zahir	Chemistry	Zahir@gmail.com	9876543218	456 Maple Road	1997-09-12	Male	CHE	4.8	A
10	Pradeep	Computer Science	Pradeep@gmail.com	9876543219	789 Cedar Street	2001-07-25	Male	CS	3.9	B

5. Query for Students with GPA less than 5.0

Question:

Create a query to fetch the details of students who have a GPA less than 5.0 from the "student_table."

Query:

```
SELECT *

FROM student_table

WHERE GPA < 5.0

ORDER BY Grade;
```

Output:

Student_id	Stu_name	Department	email_id	Phone_no	Address	Date_of_birth	Gender	Major	GPA	Grad
2	Mano	Mathematics	Mano@gmail.com	9876543211	456 Oak Avenue	1999-08-25	Male	Math	4.0	A
3	Vaishnavi	Engineering	Vaishnavi@gmail.com	9876543212	789 Pine Lane	2001-01-10	Female	ENG	4.5	A
7	Lohitha	Mathematics	Lohitha@gmail.com	9876543216	123 Oak Avenue	2000-06-30	Female	Math	4.2	A
9	Zahir	Chemistry	Zahir@gmail.com	9876543218	456 Maple Road	1997-09-12	Male	CHE	4.8	A
1	Raji	Computer Science	Raji@gmail.com	9876543210	123 Elm Street	2000-05-15	Female	CS	3.8	B
5	Saranya	Physics	Saranya@gmail.com	9876543214	654 Cedar Street	2002-03-20	Female	PHY	3.0	B
10	Pradeep	Computer Science	Pradeep@gmail.com	9876543219	789 Cedar Street	2001-07-25	Male	CS	3.9	B
4	Vijay	Engineering	Vijay@gmail.com	9876543213	321 Maple Road	2000-12-05	Male	ENG	2.8	C
8	Frank	Biology	frank@gmail.com	9876543217	321 Elm Street	1999-02-18	Male	BIO	2.5	C

6. Update Student Email and Grade

Question:

Write an update statement to modify the email and grade of a student with a specific ID in the "student_table."

Query:

```
UPDATE student_table

SET email_id = 'Lohi@example.com', Grade = 'B'

WHERE Student_id = 7;
```

7. Query for Students with Grade "B"

Question:

Develop a query to retrieve the names and ages of all students who have a grade of "B" from the "student_table."

Query:

```
SELECT Stu_name, YEAR(CURRENT_DATE) - YEAR(Date_of_birth) AS Age

FROM student_table

WHERE Grade = 'B';
```

Output:

Stu_name	Age
Raji	24
Saranya	22
Lohitha	24
Pradeep	23

8. Grouping and Calculation

Question:

Create a query to group the "student_table" by the "Department" and "Gender" columns and calculate the average GPA for each combination.

Query:

```
SELECT Department, Gender, ROUND(AVG(GPA), 1) AS Avg_GPA
FROM student_table
GROUP BY 1,2;
```

Output:

Department	Gender	Avg_GPA
Computer Science	Female	3.8
Mathematics	Male	4.0
Engineering	Female	4.5
Engineering	Male	2.8
Physics	Female	4.0
Mathematics	Female	4.2
Biology	Male	2.5
Chemistry	Male	4.8
Computer Science	Male	3.9

9. Table Renaming

Question:

Rename the "student_table" to "student_info" using the appropriate SQL statement.

Query:

```
ALTER TABLE student_table

RENAME TO student_info;
```

10. Retrieve Student with Highest GPA

Question:

Write a query to retrieve the name of the student with the highest GPA from the "student_info" table.

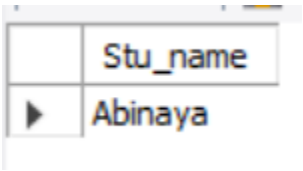
Query:

```
SELECT Stu_name

FROM student_info

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

Output:



	Stu_name
▶	Abinaya