📘 Student Management System Project (SQL)

Internship Task 1 – Main Flow Services and Technologies Pvt. Ltd.
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Database Used: SQLite

• Objective

The objective of this project is to practice SQL fundamentals such as database creation, table design, data insertion, querying, aggregation, and updating records. The dataset represents student performance in different subjects, and the queries provide useful insights for analysis.

🔷 Step 1: Database & Table Creation

Purpose: Create the Students table with fields for ID, name, gender, age, grade, and subject scores.

```
CREATE TABLE Students (
    StudentID INTEGER PRIMARY KEY AUTOINCREMENT,
    Name VARCHAR(50),
    Gender VARCHAR(1),
    Age INT,
    Grade VARCHAR(10),
    MathScore INT,
    ScienceScore INT,
    EnglishScore INT
);
```

🔷 Step 2: Insert Sample Data

Purpose: Inserted 10 diverse student records with different names, genders, grades, and subject scores.

```
INSERT INTO Students (Name, Gender, Age, Grade, MathScore, ScienceScore, EnglishScore)
VALUES
('Aarav Sharma', 'M', 15, 'A', 92, 85, 88),
('Isha Patel', 'F', 14, 'B', 78, 82, 90),
('Rohan Verma', 'M', 16, 'A', 95, 91, 87),
('Sneha Gupta', 'F', 15, 'C', 65, 70, 72),
('Karan Mehta', 'M', 14, 'B', 80, 76, 85),
('Ananya Desai', 'F', 16, 'A', 89, 92, 94),
('Vikram Nair', 'M', 15, 'C', 55, 60, 58),
('Priya Iyer', 'F', 14, 'B', 84, 88, 79),
('Aditya Rao', 'M', 16, 'A', 90, 93, 85),
('Neha Joshi', 'F', 15, 'C', 72, 68, 74);
```

🔷 Step 3: Queries & Results

1. Display all students

```
SELECT * FROM Students;
```

Observation: Verified that all 10 students were inserted successfully.

2. Calculate average scores per subject

```
SELECT
   ROUND(AVG(MathScore),2) AS AvgMath,
   ROUND(AVG(ScienceScore),2) AS AvgScience,
   ROUND(AVG(EnglishScore),2) AS AvgEnglish
FROM Students;
```

Result:

- Math Avg = **80.0**
- Science Avg = **80.5**
- English Avg = **81.2**

Observation: Students perform slightly better in **English** compared to Math and Science.

3. Find top performer (highest total score)

```
SELECT Name, (MathScore + ScienceScore + EnglishScore) AS TotalScore
FROM Students
ORDER BY TotalScore DESC
LIMIT 1;
```

Result: Ananya Desai – 275

Observation: Ananya Desai is the topper with consistently high scores in all subjects.

4. Count students in each grade

```
SELECT Grade, COUNT(*) AS StudentCount
FROM Students
GROUP BY Grade;
```

Result:

- Grade A → 4 students
- Grade B → 3 students
- Grade C → 3 students

Observation: Majority of students are in **Grade A**.

5. Average scores by gender

```
SELECT Gender,
      ROUND(AVG(MathScore),2) AS AvgMath,
      ROUND(AVG(ScienceScore),2) AS AvgScience,
      ROUND(AVG(EnglishScore),2) AS AvgEnglish
FROM Students
GROUP BY Gender;
```

Result:

- Male: Math=82.4, Science=81.0, English=80.6
- Female: Math=77.6, Science=80.0, English=81.8

Observation:

- **Males** score higher in Math.
- **Females** score higher in English.
- Science scores are almost equal.

6. Students with Math > 80

```
SELECT StudentID, Name, MathScore
FROM Students
WHERE MathScore > 80
ORDER BY MathScore DESC;
```

Observation: 5 high achievers in Math, with Rohan Verma leading.

7. Update student's grade

```
UPDATE Students
SET Grade = 'A'
WHERE StudentID = 2;
```

Observation: Isha Patel's grade was successfully updated from **B → A**.

• Final Insights

- Average performance is **around 80 marks** in all subjects.
- **Topper:** Ananya Desai (Total = 275).
- Grade distribution is balanced: **A (4), B (3), C (3)**.
- **Males excel in Math**, while **Females excel in English**.
- Rohan Verma is the **best in Math** with 95.
- Updating grades works as expected.

• Conclusion

This project provided hands-on experience in SQL operations such as:

- Table creation (`CREATE TABLE`)
- Data insertion (`INSERT`)
- Data retrieval & filtering (`SELECT`, `WHERE`, `ORDER BY`)
- Aggregation (`AVG`, `COUNT`, `GROUP BY`)
- Updating records (`UPDATE`)

It helped in understanding **how to analyze real-world student performance data using SQL**.