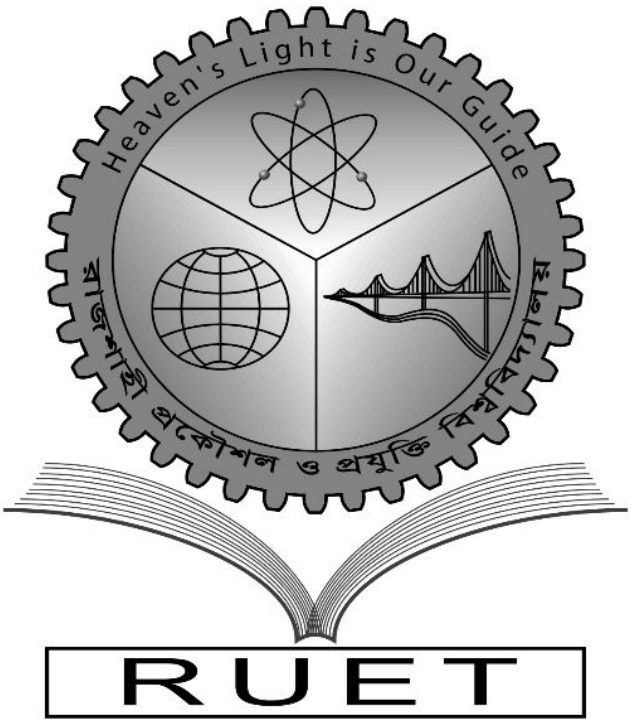
"Heaven's Light is Our Guide

Rajshahi University of Engineering & Technology
Rajshahi, Bangladesh



Department of Electrical & Computer Engineering
(ECE-21)

Course Code: ECE 2216
Course Title: Database Systems Sessional
Experiment No: 02
Date of Submission: 30/09/2024

Submitted To:
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ECE-21 Series

Experiment No. 01

Experiment Name: Managing Student Database and Conditional Data Logging in MySQL

Problem Statement:

1. Find students who are older than 20 and have a GPA above the average GPA of all students
2. Find the top 5 students with the highest fees paid, ordered by GPA (in descending order)
as a tiebreaker
3. List students who belong to the "Engineering" department, have a GPA greater than 3.5,
and are enrolled after 2020
4. Find students who are not active (i.e., enrollment_status = 'inactive') and have not paid
any fees (fees_paid = 0)
5. Calculate the total fees paid and average GPA for each department, but only for departments with more than 10 students

Software Used:

- Xampp Control Panel
- MySQL

Task: **Creating database and table**

```sql
CREATE DATABASE students_db;
USE students_db;

```

```sql
USE students_db;

CREATE TABLE students (
    student_id INT PRIMARY KEY,
    student_name VARCHAR(50),
    age INT,
    GPA DECIMAL(3, 2),
    department VARCHAR(50),
    year_of_admission INT,
    fees_paid DECIMAL(10, 2),
    credits_earned INT,
    enrollment_status VARCHAR(10)
);
```

```sql
INSERT INTO students (student_id, student_name, age, GPA, department, year_of_admission, fees_paid, credits_earned, en
VALUES
(1, 'Eleven', 21, 3.8, 'Engineering', 2021, 10000, 120, 'active'),
(2, 'Dustin', 22, 3.9, 'Science', 2020, 9000, 110, 'active'),
(3, 'Will', 19, 3.4, 'Science', 2022, 8500, 95, 'active'),
(4, 'Mike', 23, 3.7, 'Science', 2021, 9500, 115, 'inactive'),
(5, 'Max', 20, 3.5, 'Engineering', 2020, 12000, 130, 'active'),
(6, 'Eddie', 22, 4.0, 'Arts', 2019, 8000, 140, 'active'),
(7, 'Billy', 24, 2.9, 'Engineering', 2022, 5000, 60, 'active'),
(8, 'Alexei', 25, 3.2, 'Business', 2018, 7500, 100, 'inactive'),
(9, 'Steve', 21, 3.8, 'Science', 2021, 10500, 120, 'active'),
(10, 'Robin', 20, 3.6, 'Engineering', 2022, 11000, 125, 'active'),
(11, 'Lucas', 18, 2.7, 'Engineering', 2023, 4000, 50, 'active'),
(12, 'Nancy', 23, 3.9, 'Business', 2019, 9500, 135, 'active');

```

Output:

	student_id	student_name	age	GPA	department	year_of_admission	fees_paid	credits_e
Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	
Edit Copy Delete	2	Dustin	22	3.90	Science	2020	9000.00	
Edit Copy Delete	3	Will	19	3.40	Science	2022	8500.00	
Edit Copy Delete	4	Mike	23	3.70	Science	2021	9500.00	
Edit Copy Delete	5	Max	20	3.50	Engineering	2020	12000.00	
Edit Copy Delete	6	Eddie	22	4.00	Arts	2019	8000.00	
Edit Copy Delete	7	Billy	24	2.90	Engineering	2022	5000.00	
Edit Copy Delete	8	Alexei	25	3.20	Business	2018	7500.00	
Edit Copy Delete	9	Steve	21	3.80	Science	2021	10500.00	
Edit Copy Delete	10	Robin	20	3.60	Engineering	2022	11000.00	
Edit Copy Delete	11	Lucas	18	2.70	Engineering	2023	4000.00	
Edit Copy Delete	12	Nancy	23	3.90	Business	2019	9500.00	

Task 1: Find students older than 20 with GPA above the average GPA of all students

Code:

```
1 SELECT *
2 FROM students
3 WHERE age > 20
4 AND GPA > (SELECT AVG(GPA) FROM students);
5
```

Output:

	student_id	student_name	age	GPA	department	year_of_admission	fees_paid	cre
Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	
Edit Copy Delete	2	Dustin	22	3.90	Science	2020	9000.00	
Edit Copy Delete	4	Mike	23	3.70	Science	2021	9500.00	
Edit Copy Delete	6	Eddie	22	4.00	Arts	2019	8000.00	
Edit Copy Delete	9	Steve	21	3.80	Science	2021	10500.00	
Edit Copy Delete	12	Nancy	23	3.90	Business	2019	9500.00	

Task 2: Find the top 5 students with the highest fees paid, ordered by GPA (as a tiebreaker)

Code:

```
1 SELECT *
2 FROM students
3 ORDER BY fees_paid DESC, GPA DESC
4 LIMIT 5;
5
```

Output:

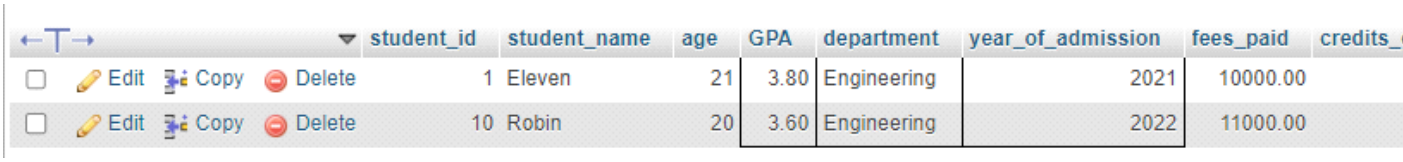
	student_id	student_name	age	GPA 2	department	year_of_admission	fees_paid 1	credit
Edit Copy Delete	5	Max	20	3.50	Engineering	2020	12000.00	
Edit Copy Delete	10	Robin	20	3.60	Engineering	2022	11000.00	
Edit Copy Delete	9	Steve	21	3.80	Science	2021	10500.00	
Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	
Edit Copy Delete	12	Nancy	23	3.90	Business	2019	9500.00	

Task 3: List students from the "Engineering" department with a GPA greater than 3.5 and enrolled after 2020

Code:

```sql
SELECT *
FROM students
WHERE department = 'Engineering'
AND GPA > 3.5
AND year_of_admission > 2020;
```

Output:



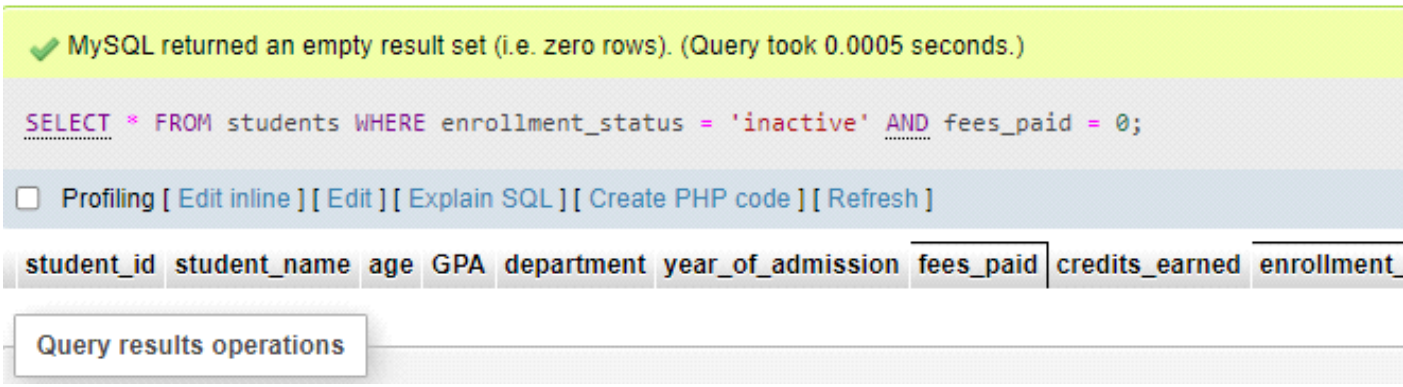
	student_id	student_name	age	GPA	department	year_of_admission	fees_paid	credits_
Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	
Edit Copy Delete	10	Robin	20	3.60	Engineering	2022	11000.00	

Task 4: Find students who are not active and have not paid any fees (fees_paid = 0)

Code:

```sql
SELECT *
FROM students
WHERE enrollment_status = 'inactive'
AND fees_paid = 0;
```

Output:



Task 5: Calculate the total fees paid and average GPA for each department with more than 10 students

Code:

```
1 SELECT department, SUM(fees_paid) AS total_fees, AVG(GPA) AS averag
2 FROM students
3 GROUP BY department
4 HAVING COUNT(*) > 10;
5
```

Output: