“Heaven’s Light is Our Guide”

Rajshahi University of Engineering & Technology, Rajshahi.

Department of Electrical & Computer Engineering

Course Code: ECE 2216

Course Title: Data Base Systems Sessional

Report No: 02

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Experiment No: 02

Experiment Name:

Students Table:

student_id	student_name	age	GPA	department	year_of_admission	fees_paid	credits_earned	enrollment_status
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	Business	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

Task:

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

Objective:

The objective of this lab report is to analyze and manipulate data from a student database using various SQL queries. The data is presented in a table format, containing information about students' IDs, names, ages, GPAs, departments, years of admission, fees paid, credits earned, and enrollment statuses.

The following tasks are performed:

Students older than 20 with above-average GPAs: Students who are older than 20 and have a GPA higher than the average GPA of all students are identified.

Top 5 students with highest fees paid: The top 5 students with the highest fees paid are determined, with GPA used as a tiebreaker in descending order.

Engineering students with GPA greater than 3.5 and enrolled after 2020: Students who belong to the "Engineering" department, have a GPA greater than 3.5, and are enrolled after 2020 are listed.

Inactive students with no fees paid: Students who are not active (i.e., enrollment_status = 'inactive') and have not paid any fees (fees_paid = 0) are identified.

Total fees paid and average GPA for departments with more than 10 students: The total fees paid and average GPA for each department are calculated, but only for departments with more than 10 students.

By completing these tasks, the lab report demonstrates an understanding of SQL concepts and their application in retrieving specific information from a dataset. It provides a practical exercise in applying SQL skills to real-world data analysis scenarios.

Query & Output:

Query 1:

Code:

Run SQL query/queries on table students table.students:

```
1 SELECT student_id, student_name, age, GPA
2 FROM students
3 WHERE age > 20 AND GPA > (SELECT AVG(GPA) FROM students);
```

Output:

Extra options

	student_id	student_name	age	GPA
Edit Copy Delete	1	Eleven	21	3.80
Edit Copy Delete	2	Dustin	22	3.90
Edit Copy Delete	4	Mike	23	3.70
Edit Copy Delete	6	Eddie	22	4.00
Edit Copy Delete	9	Steve	21	3.80
Edit Copy Delete	12	Nancy	23	3.90

Check all *With selected:* Edit Copy Delete Export

Query 2:

Code:

Run SQL query/queries on table students table.students:

```
SELECT student_id, student_name, fees_paid, GPA
FROM students
ORDER BY fees_paid DESC, GPA DESC
LIMIT 5;
```

Output:

Extra options

	student_id	student_name	fees_paid 1	GPA 2
Edit Copy Delete	5	Max	12000	3.50
Edit Copy Delete	10	Robin	11000	3.60
Edit Copy Delete	9	Steve	10500	3.80
Edit Copy Delete	1	Eleven	10000	3.80
Edit Copy Delete	12	Nancy	9500	3.90

Check all *With selected:* Edit Copy Delete Export

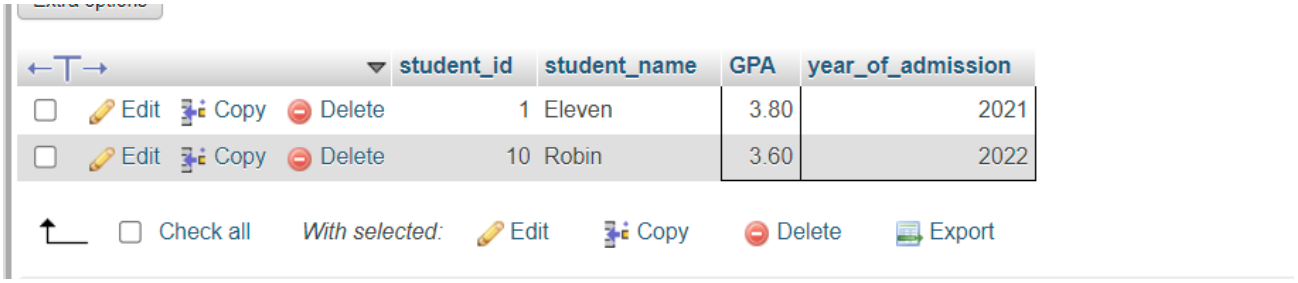
Query 3:

Code:

Run SQL query/queries on table students table.students:

```
SELECT student_id, student_name, GPA, year_of_admission
FROM students
WHERE department = 'Engineering' AND GPA > 3.5 AND year_of_admission > 2020;
```

Output:

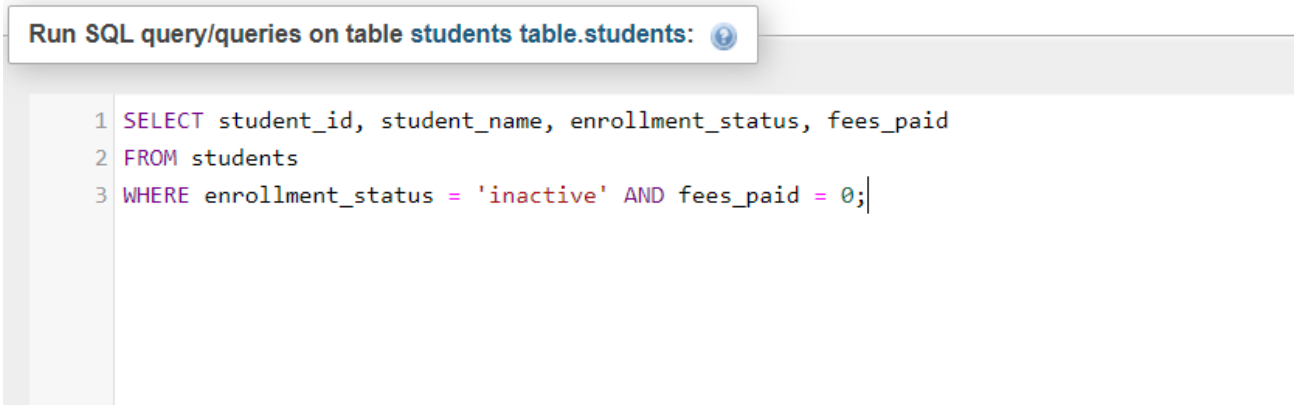


	student_id	student_name	GPA	year_of_admission
Edit Copy Delete	1	Eleven	3.80	2021
Edit Copy Delete	10	Robin	3.60	2022

Check all *With selected:* Edit Copy Delete Export

Query 4:

Code:



Run SQL query/queries on table students table.students:

```
1 SELECT student_id, student_name, enrollment_status, fees_paid
2 FROM students
3 WHERE enrollment_status = 'inactive' AND fees_paid = 0;
```

Output:

Show query box

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0002 seconds.)

```
SELECT student_id, student_name, enrollment_status, fees_paid FROM students WHERE enrollment_status = 'inactive' AND fees_paid = 0;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

student_id	student_name	enrollment_status	fees_paid

Query results operations

Create view

Bookmark this SQL query

Label: Let every user access this bookmark

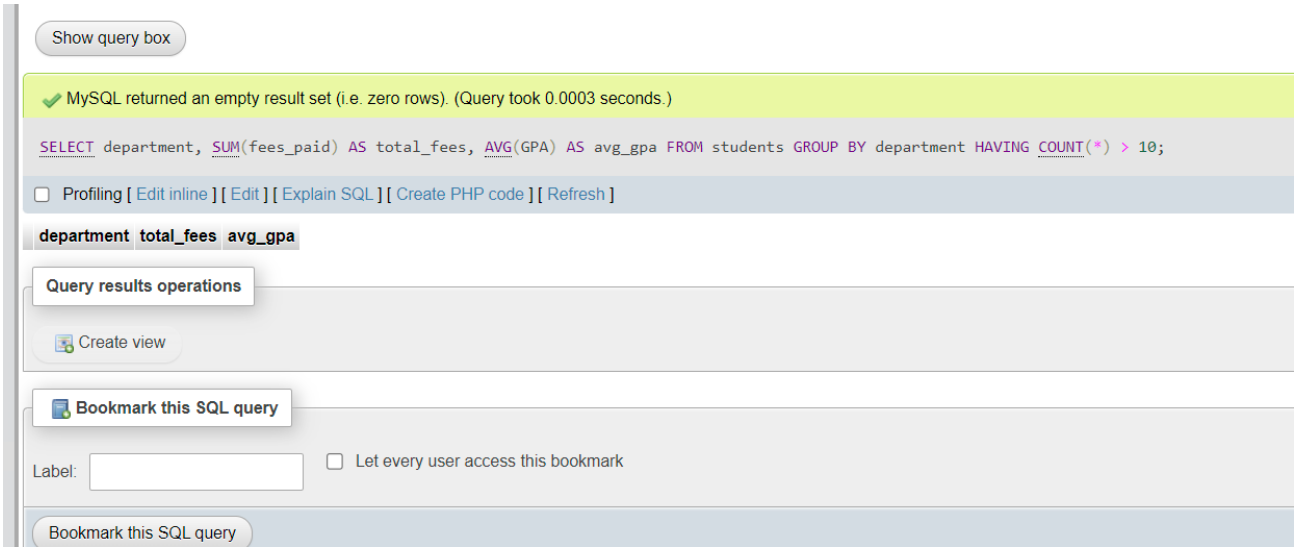
Query 5:

Code:

Run SQL query/queries on table students table.students:

```sql
SELECT department, SUM(fees_paid) AS total_fees, AVG(GPA) AS avg_gpa
FROM students
GROUP BY department
HAVING COUNT(*) > 10;
```

Output:



Discussion:

The student table is a structured repository for storing essential student information, including personal details, academic performance, financial contributions, and enrollment status. It enables educational institutions to efficiently manage and analyze data, such as tracking student progress through GPA and credits_earned, monitoring financial status with fees_paid, and identifying active or inactive students. This table facilitates complex queries for decision-making, allowing administrators to gain insights into academic performance, financial compliance, and departmental statistics, thereby supporting informed decisions and efficient resource management