

*Heaven's Light is Our Guide*

**Rajshahi University of Engineering & Technology**



**RUET**

**Course Title**

**Data Base Systems-Sessional**

**Course No.**

**ECE-2216**

**Report**

**02**

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## 2.1 Experiment No.: 02

## 2.2 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

Perform several operations on the table given in the tasks.

## 2.3 Objectives:

- To learn how to create and define a database for organizing student information using SQL commands.
- To practice filtering and retrieving student data based on specific conditions such as age, GPA, and department.
- To understand how to use SQL aggregate functions like SUM and AVG for calculations on the dataset.
- To develop skills in writing complex queries using clauses like WHERE, ORDER BY, and subqueries.
- To gain experience in managing databases using XAMPP, including creating tables and performing data manipulation tasks efficiently.

## 2.4 Query and Output:

### Create The Table:

```
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)
);
INSERT INTO students (student_id, student_name, age, GPA, department, year_of_admission,
fees_paid, credits_earned, enrollment_status) VALUES
(1, 'Eleven', 21, 3.8, 'Engineering', 2021, 10000, 120, 'active'),
(2, 'Dustin', 22, 3.9, 'Science', 2022, 9000, 110, 'active'),
(3, 'Will', 19, 3.4, 'Business', 2021, 9500, 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, 7500, 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, 12000, 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_earned	enrollment_status
<input type="checkbox"/> Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	120	active
<input type="checkbox"/> Edit Copy Delete	2	Dustin	22	3.90	Science	2022	9000.00	110	active
<input type="checkbox"/> Edit Copy Delete	3	Will	19	3.40	Business	2021	9500.00	95	active
<input type="checkbox"/> Edit Copy Delete	4	Mike	23	3.70	Science	2021	9500.00	115	inactive
<input type="checkbox"/> Edit Copy Delete	5	Max	20	3.50	Engineering	2020	12000.00	130	active
<input type="checkbox"/> Edit Copy Delete	6	Eddie	22	4.00	Arts	2019	8000.00	140	active
<input type="checkbox"/> Edit Copy Delete	7	Billy	24	2.90	Engineering	2022	7500.00	60	active
<input type="checkbox"/> Edit Copy Delete	8	Alexei	25	3.20	Business	2018	7500.00	100	inactive
<input type="checkbox"/> Edit Copy Delete	9	Steve	21	3.80	Science	2021	10500.00	120	active
<input type="checkbox"/> Edit Copy Delete	10	Robin	20	3.60	Engineering	2022	12000.00	125	active
<input type="checkbox"/> Edit Copy Delete	11	Lucas	18	2.70	Engineering	2023	4000.00	50	active
<input type="checkbox"/> Edit Copy Delete	12	Nancy	23	3.90	Business	2019	9500.00	135	active

- **Task 1:** Find students who are older than 20 and have a GPA above the average GPA of all students

```
SELECT AVG(GPA) AS avg_gpa FROM students;
```

```
SELECT *
```

FROM students

WHERE age > 20

AND GPA > (SELECT AVG(GPA) FROM students);

**Output:**

	student_id	student_name	age	GPA	department	year_of_admission	fees_paid	credits_earned	enrollment_status
<input type="checkbox"/> Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	120	active
<input type="checkbox"/> Edit Copy Delete	2	Dustin	22	3.90	Science	2022	9000.00	110	active
<input type="checkbox"/> Edit Copy Delete	4	Mike	23	3.70	Science	2021	9500.00	115	inactive
<input type="checkbox"/> Edit Copy Delete	6	Eddie	22	4.00	Arts	2019	8000.00	140	active
<input type="checkbox"/> Edit Copy Delete	9	Steve	21	3.80	Science	2021	10500.00	120	active
<input type="checkbox"/> Edit Copy Delete	12	Nancy	23	3.90	Business	2019	9500.00	135	active

↑ ☐ Check all With selected: Edit Copy Delete Export

- **Task 2:** Find the top 5 students with the highest fees paid, ordered by GPA (in descending order) as a tiebreaker.

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

**Output:**

	student_id	student_name	age	GPA	department	year_of_admission	fees_paid	credits_earned	enrollment_status
<input type="checkbox"/> Edit Copy Delete	10	Robin	20	3.60	Engineering	2022	12000.00	125	active
<input type="checkbox"/> Edit Copy Delete	5	Max	20	3.50	Engineering	2020	12000.00	130	active
<input type="checkbox"/> Edit Copy Delete	9	Steve	21	3.80	Science	2021	10500.00	120	active
<input type="checkbox"/> Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	120	active
<input type="checkbox"/> Edit Copy Delete	12	Nancy	23	3.90	Business	2019	9500.00	135	active

- **Task 3:** List students who belong to the "Engineering" department, have a GPA greater than 3.5, and are enrolled after 2020.

```
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_earned	enrollment_status
<input type="checkbox"/> Edit Copy Delete	1	Eleven	21	3.80	Engineering	2021	10000.00	120	active
<input type="checkbox"/> Edit Copy Delete	10	Robin	20	3.60	Engineering	2022	12000.00	125	active

- **Task 4:** Find students who are not active (i.e., enrollment\_status = 'inactive') and have not paid any fees (fees\_paid = 0).

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

**Output:**

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0007 seconds.)								
SELECT * FROM students WHERE enrollment_status = 'inactive' AND fees_paid = 0;								
<input type="checkbox"/> Profiling [ <a href="#">Edit inline</a> ] [ <a href="#">Edit</a> ] [ <a href="#">Explain SQL</a> ] [ <a href="#">Create PHP code</a> ] [ <a href="#">Refresh</a> ]								
student_id	student_name	age	GPA	department	year_of_admission	fees_paid	credits_earned	enrollment_status

- **Task 5:** Calculate the total fees paid and average GPA for each department, but only for departments with more than 10 students

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

**Output:**

department	student_count
Arts	1
Business	3
Engineering	5
Science	3