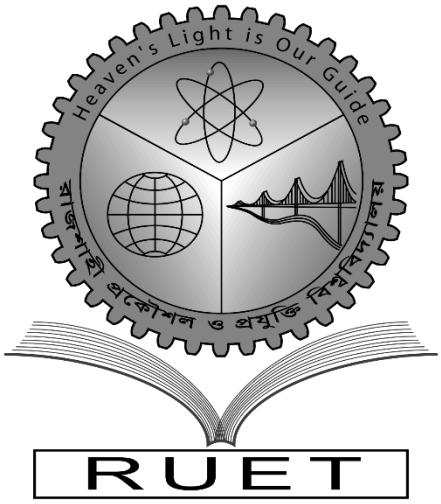
"Heaven's Light is Our Guide

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: 01
Date of Submission: 23/09/2024

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Experiment No. 01

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

Theory:

Efficient management of structured data is key in today's database systems for various practical uses. This experiment explores the core database tasks, including creating, updating, deleting, and conditionally modifying records in a MySQL relational database within a XAMPP setup.[1] It utilizes SQL (Structured Query Language) commands to organize and manipulate student data in a structured table format. [2]

Problem Statement:

Set up a database to store the following details for 10 students: (roll number, name, semester, major/favorite subject, obtained marks)

a. Create a database and a table for student information.
b. Rename a specific column in the table.
c. Remove the records of students who scored less than 30 marks.
d. Add a new column called "log" that assigns "applicable" or "not applicable" based on the condition (marks < 30).

Software Used:

1. Xampp Control Panel
2. MySQL

Task 1:

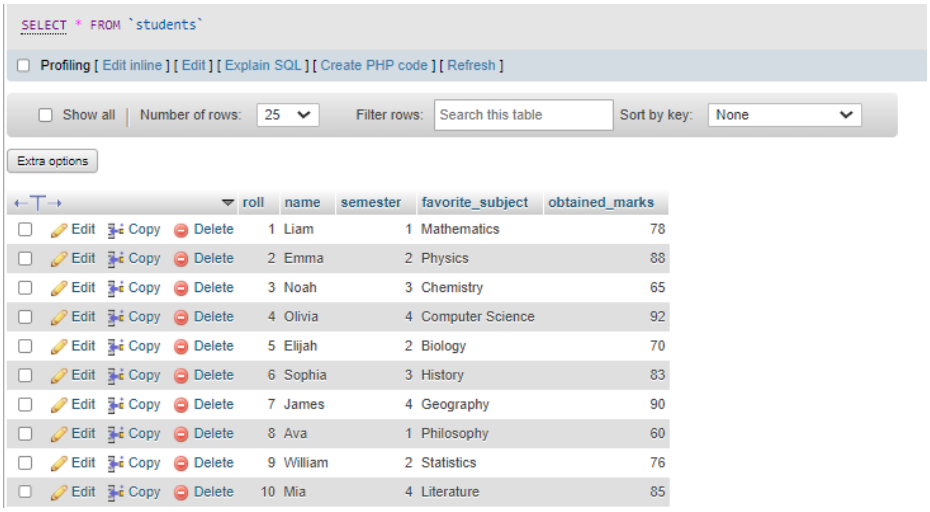
Code: Creating database and table

```sql
CREATE DATABASE student_db;
```

```sql
CREATE TABLE students (
    roll INT PRIMARY KEY,
    name VARCHAR(100),
    semester INT,
    favorite_subject VARCHAR(50),
    obtained_marks INT
);
```

```sql
INSERT INTO students (roll, name, semester, favorite_subject, obtained_marks)
VALUES
(1, 'Liam', 1, 'Mathematics', 78),
(2, 'Emma', 2, 'Physics', 88),
(3, 'Noah', 3, 'Chemistry', 65),
(4, 'Olivia', 4, 'Computer Science', 92),
(5, 'Elijah', 2, 'Biology', 70),
(6, 'Sophia', 3, 'History', 83),
(7, 'James', 4, 'Geography', 90),
(8, 'Ava', 1, 'Philosophy', 60),
(9, 'William', 2, 'Statistics', 76),
(10, 'kia', 4, 'Literature', 85);
```

Output:



```
SELECT * FROM `students`
Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]
Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None
Extra options
```

	roll	name	semester	favorite_subject	obtained_marks
Edit Copy Delete	1	Liam	1	Mathematics	78
Edit Copy Delete	2	Emma	2	Physics	88
Edit Copy Delete	3	Noah	3	Chemistry	65
Edit Copy Delete	4	Olivia	4	Computer Science	92
Edit Copy Delete	5	Elijah	2	Biology	70
Edit Copy Delete	6	Sophia	3	History	83
Edit Copy Delete	7	James	4	Geography	90
Edit Copy Delete	8	Ava	1	Philosophy	60
Edit Copy Delete	9	William	2	Statistics	76
Edit Copy Delete	10	Mia	4	Literature	85

Task 2:

Code: Changing a Specific Column Name in MySQL

```
MySQL returned an empty result set (i.e. zero rows). (Query took 0.0068 seconds.)

ALTER TABLE students CHANGE obtained_marks marks_scored INT;
```

Output:

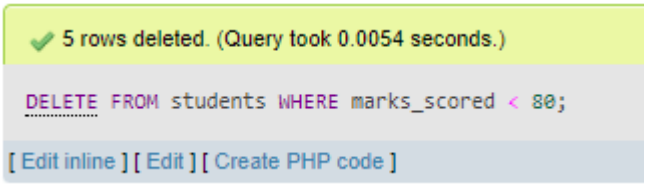
	roll	name	semester	favorite_subject	marks_scored	status
Edit Copy Delete	1	Liam	1	Mathematics	78	Passed

Task 3:

Code: Deleting Students' Information with Marks Below 30 in MySQL

```
1 DELETE FROM student
2 WHERE marks_scored < 80;
```

Output:



```
5 rows deleted. (Query took 0.0054 seconds.)

DELETE FROM students WHERE marks_scored < 80;

[ Edit inline ] [ Edit ] [ Create PHP code ]
```

Task 4:

Code:

Adding a New Column and Assigning Values Based on a Condition

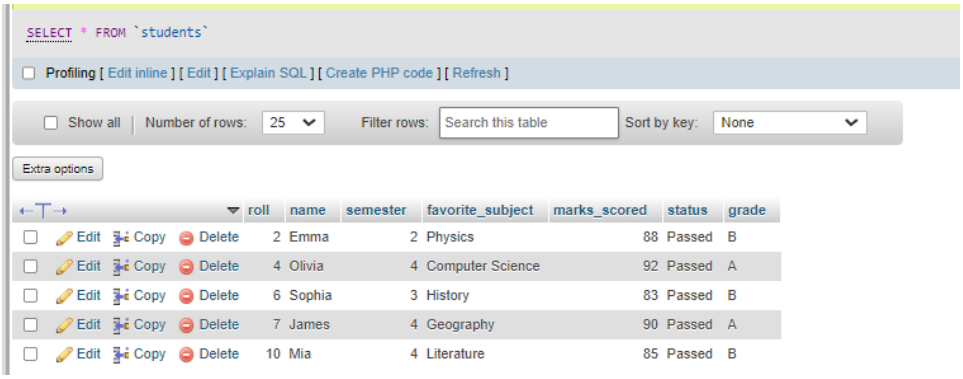
```sql
ALTER TABLE students
ADD COLUMN grade VARCHAR(2);

```

```sql
UPDATE students
SET grade =
  CASE
    WHEN marks_scored >= 90 THEN 'A'
    WHEN marks_scored >= 80 THEN 'B'
    WHEN marks_scored >= 70 THEN 'C'
    WHEN marks_scored >= 60 THEN 'D'
    ELSE 'F'
  END;

```

Output:



SELECT * FROM `students`

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

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

Extra options

	roll	name	semester	favorite_subject	marks_scored	status	grade
Edit Copy Delete	2	Emma	2	Physics	88	Passed	B
Edit Copy Delete	4	Olivia	4	Computer Science	92	Passed	A
Edit Copy Delete	6	Sophia	3	History	83	Passed	B
Edit Copy Delete	7	James	4	Geography	90	Passed	A
Edit Copy Delete	10	Mia	4	Literature	85	Passed	B

Discussion:

This experiment looked at basic database tasks using MySQL in XAMPP. We started by creating a database called “student_db” and a table named “students.” We changed a column name from “favorite_subject” to “major” to show how to manage changes in the table. We deleted records for students who scored below 30 marks to keep the data relevant. We also added a new column called “log” and filled it with values based on the semester. Overall, this experiment helped us understand important tasks like creating, changing, and managing data in a simple way, making the database more useful and accurate.[3]

References:

[1] “Learn MySQL Tutorial - javatpoint.” Accessed: Sep. 23, 2024. [Online]. Available: https://www.javatpoint.com/mysql-tutorial

[2] “MySQL Tutorial - Learn MySQL Fast, Easy and Fun.” Accessed: Sep. 23, 2024. [Online]. Available: https://www.mysqltutorial.org/

[3] “MySQL Tutorial.” Accessed: Sep. 23, 2024. [Online]. Available: https://www.w3schools.com/MySQL/default.asp