Havens Light is Our Guide

Rajshahi University of Engineering & Technology

Course Title

Data Base Systems - Sessional

Course No.

ECE 2216

Lab Report - 01

Submitted By
Prattay Deb Soom
Roll: 2110056
Reg No: 1110/2021-2022
Department of ECE, RUET

Submitted To
Oishi Jyoti
Assistant Professor
Department of ECE, RUET

Experiment No. 01

Experiment Name: Create a Database containing following info for 10 students.

I. Roll
II. Name
III. Semester
IV. Major Subject
V. Obtained Marks

Theory:

A database is an organized collection of structured data that allows for efficient storage, retrieval, and manipulation of information. MySQL is a widely used relational database management system (RDBMS) that enables users to manage data using SQL (Structured Query Language). The primary objective of creating a database in MySQL is to organize data in a structured manner, where relationships between tables can be easily defined, accessed, and manipulated through queries.

Task 1. Create database and table.

SQL Commands:

```sql
CREATE DATABASE Students;
USE Students;

CREATE TABLE Student_info
(
   Roll INT(20),
   Name TEXT(20),
   Semester VARCHAR(50),
   Major TEXT(20),
   Obtained_Mark INT(20)
);

INSERT INTO Student_info (Roll, Name, Semester, Major, Obtained_Mark) VALUES
(1, 'Prattay', '2-2', 'Mathematics', 56),
(2, 'Sadi', '3-2', 'Computer Engineering', 57),
(3, 'Fahim', '4-2', 'Machine Learning', 55),
(4, 'Anirban', '3-2', 'Electrical Engineering', 60),
(5, 'Naeem', '3-1', 'Photography', 29),
(6, 'Joydip', '2-1', 'Mathematics', 49),
(7, 'Arnab', '1-1', 'Computer Engineering', 69),
(8, 'Suvon', '2-2', 'Chemical Engineering', 63),
(9, 'Hridoy', '1-1', 'English', 16),
(10, 'Sourov', '1-2', 'Software Engineering', 26);
```

Output:

Roll	Name	Semester	Major	Obtained_Mark
1	Prattay	2-2	Mathematics	56
2	Sadi	3-2	Computer Engineering	57
3	Fahim	4-2	Machine Learning	55
4	Anirban	3-2	Electrical Engineering	60
5	Naeem	3-1	Photography	29
6	Joydip	2-1	Mathematics	49
7	Arnab	1-1	Computer Engineering	69
8	Suvon	2-2	Chemical Engineering	63
9	Hridoy	1-1	English	16
10	Sourov	1-2	Software Engineering	26

Task 2. Change a specific column name and its datatype.

SQL Commands:

```
1 ALTER TABLE student_info CHANGE COLUMN Major Major_Sub VARCHAR(50);
```

Output:

Roll ▲ 1	Name	Semester	Major_Sub	Obtained_Mark
1	Prattay	2-2	Mathematics	56
2	Sadi	3-2	Computer Engineering	57
3	Fahim	4-2	Machine Learning	55
4	Anirban	3-2	Electrical Engineering	60
5	Naeem	3-1	Photography	29
6	Joydip	2-1	Mathematics	49
7	Arnab	1-1	Computer Engineering	69
8	Suvon	2-2	Chemical Engineering	63
9	Hridoy	1-1	English	16
10	Sourov	1-2	Software Engineering	26

	#	Name	Type
☐	1	**Roll**	int(20)
☐	2	**Name**	tinytext
☐	3	**Semester**	varchar(50)
☐	4	**Major_Sub**	varchar(50)
☐	5	**Obtained_Mark**	int(20)

Task 3. Add a new column named as “log”. Set the value to applicable or not applicable based on the condition (marks < 30).

SQL Commands:

```
ALTER TABLE student_info ADD Log VARCHAR(50);
UPDATE student_info SET Log = 'Applicable' WHERE Obtained_Mark < 30;
UPDATE student_info SET Log = 'Not Applicable' WHERE Obtained_Mark >= 30;
```

Output:

Roll	Name	Semester	Major_Sub	Obtained_Mark	Log
1	Prattay	2-2	Mathematics	56	Not Applicable
2	Sadi	3-2	Computer Engineering	57	Not Applicable
3	Fahim	4-2	Machine Learning	55	Not Applicable
4	Anirban	3-2	Electrical Engineering	60	Not Applicable
5	Naeem	3-1	Photography	29	Applicable
6	Joydip	2-1	Mathematics	49	Not Applicable
7	Arnab	1-1	Computer Engineering	69	Not Applicable
8	Suvon	2-2	Chemical Engineering	63	Not Applicable
9	Hridoy	1-1	English	16	Applicable
10	Sourov	1-2	Software Engineering	26	Applicable

Task 4. Delete the student information for those whose marks are below 30.

SQL Commands:

```
DELETE FROM student_info WHERE Obtained_Mark < 30;
```

Output:

Roll	Name	Semester	Major_Sub	Obtained_Mark	Log
1	Prattay	2-2	Mathematics	56	Not Applicable
2	Sadi	3-2	Computer Engineering	57	Not Applicable
3	Fahim	4-2	Machine Learning	55	Not Applicable
4	Anirban	3-2	Electrical Engineering	60	Not Applicable
6	Joydip	2-1	Mathematics	49	Not Applicable
7	Arnab	1-1	Computer Engineering	69	Not Applicable
8	Suvon	2-2	Chemical Engineering	63	Not Applicable

Discussion:

Creating a database in MySQL involves defining its structure through tables, setting up relationships between data entities, and ensuring data integrity through constraints and normalization. Both DDL and DML play vital roles in the lifecycle of database creation and management. DDL defines the blueprint or architecture of the database, while DML focuses on managing and interacting with the data within that architecture. In the context of this lab, DDL was used to create the database and table structures, whereas DML was used to populate, query, and manipulate the data. Understanding both types of commands is essential for efficient database management and ensuring that data is stored in a well-structured, organized, and easily accessible manner.

References:

1. Paul DuBois. “MySQL: The Complete Reference”. McGraw-Hill, 2003.

2. Vikram Vaswani. “MySQL Database Usage & Administration”. Sams Publishing, 2002.