

Week – 1

Installation of MySQL and Practicing DDL Commands

Aim: To install MySQL Server and MySQL Workbench and practice Data Definition Language (DDL) commands.

Objectives

- Install MySQL Server and MySQL Workbench.
- Connect to the MySQL Server.
- Create a database and tables.
- Practice CREATE, ALTER, RENAME, TRUNCATE and DROP commands.

Software Requirements

- Windows 10/11
- MySQL Community Server 8.x
- MySQL Workbench 8.x

MySQL Installation Steps

1. Download MySQL Community Installer from the official MySQL website.
2. Run the installer as Administrator.
3. Choose 'Developer Default' (or 'Server Only' if instructed).
4. Click Next and install all required components.
5. Configure MySQL Server with Standalone configuration.
6. Keep TCP/IP port as 3306.
7. Set a strong password for the root user and remember it. (matrusri)
8. Apply the configuration and finish the installation.
9. Open MySQL Workbench.
10. Connect using Local Instance MySQL80, username root, and the password created during installation.
11. Execute: `SELECT VERSION();` to verify successful installation.

DDL (Data Definition Language) commands define and modify the structure of database objects. DDL commands are automatically committed.

Command	Syntax	Purpose
CREATE DATABASE	CREATE DATABASE db_name;	Creates a database
USE	USE db_name;	Selects database
CREATE TABLE	CREATE TABLE table_name(...);	Creates table
DESC	DESC table_name;	Displays structure
ALTER TABLE	ALTER TABLE table_name ADD column datatype;	Modifies table
RENAME TABLE	RENAME TABLE old TO new;	Renames table
TRUNCATE TABLE	TRUNCATE TABLE table_name;	Removes all rows
DROP TABLE	DROP TABLE table_name;	Deletes table
DROP DATABASE	DROP DATABASE db_name;	Deletes database

To Display all databases

Syntax:

```
SHOW DATABASES;
```

Create the UniveristyDB.

Syntax:

```
CREATE DATABASE db_name;
```

Example:

```
CREATE DATABASE UniversityDB;
```

Syntax to use the Database:

```
USE db_name;
```

Example:

```
Use UniversityDB;
```

CLASSROOM

building	room_number	capacity
Packard	101	500
Painter	514	10
Taylor	3128	70
Watson	100	30
Watson	120	50

SQL statement to create the above CLASSROOM table.

```
CREATE TABLE CLASSROOM (  
    building VARCHAR(20),  
    room_number INT,  
    capacity INT  
);
```

The **DESC** (or **DESCRIBE**) command in MySQL is used to display the **structure (schema)** of a table.

Syntax:

```
DESC table_name;
```

Example:

```
DESC classroom;
```

ALTER Command: It is used to modify the structure of an existing table. It can be used to add, modify, rename, or delete columns and constraints.

To Add a New Column

Syntax:

```
ALTER TABLE table_name ADD column_name datatype;
```

Example:

```
ALTER TABLE classroom ADD department VARCHAR(3);
```

To Modify a Column Data Type

Syntax:

```
ALTER TABLE table_name MODIFY COLUMN column_name new_datatype;
```

Example:

```
ALTER TABLE classroom MODIFY department VARCHAR(20);
```

To Rename a Column

Syntax:

```
ALTER TABLE table_name RENAME COLUMN old_column_name TO new_column_name;
```

Example:

```
ALTER TABLE classroom RENAME COLUMN department TO dept;
```

To Delete a Column

Syntax:

```
ALTER TABLE table_name DROP COLUMN column_name;
```

Example:

```
ALTER TABLE classroom DROP COLUMN dept;
```

DROP TABLE Command: It is used to permanently delete a table from the database. It removes the table structure and all the data stored in it.

Syntax:

```
DROP TABLE table_name;
```

Example:

```
DROP TABLE classroom;
```

DROP DATABASE Command: It is used to permanently delete an entire database. It removes the database along with all its tables, views, indexes, stored procedures, functions, triggers, and data.

- *Once a database is dropped, it cannot be recovered unless a backup is available.*

Syntax:

```
DROP DATABASE database_name;
```

Example:

```
DROP DATABASE UniveristyDB;
```

Practice Questions

1. Create the following tables along with constraints and insert records: DEPARTMENT, TIME_SLOT.

DEPARTMENT

dept_name	building	budget
Biology	Watson	90000
Comp. Sci.	Taylor	100000
Elec. Eng.	Taylor	85000
Finance	Painter	120000
History	Painter	50000
Music	Packard	80000
Physics	Watson	70000

TIME_SLOT

time_slot_id	day	start_time	end_time
A	M	08:00	08:50
A	W	08:00	08:50
A	F	08:00	08:50
B	M	09:00	09:50
B	W	09:00	09:50
B	F	09:00	09:50
C	M	11:00	11:50
C	W	11:00	11:50
C	F	11:00	11:50
D	T	13:00	14:15
D	R	13:00	14:15
E	T	10:30	11:45
E	R	10:30	11:45
F	T	14:30	15:45
F	R	14:30	15:45
G	M	16:00	16:50
G	W	16:00	16:50
G	F	16:00	16:50
H	W	10:00	12:30

Display the structure of the tables using the DESC command.

For COURSE table:

1. Add a new column semester of type VARCHAR(10).
2. 4. Add a new column course_type of type VARCHAR(20).
3. 5. Modify the data type of title from VARCHAR(50) to VARCHAR(100).
4. 6. Modify the data type of credits to DECIMAL(3,1).
5. 7. Rename the column semester to course_semester.
6. 8. Rename the column course_type to type.
7. 9. Drop the type column.
8. 10. Display the structure of the table after every modification.
9. 11. Rename the table course to course_details.
10. 12. Rename it back to course.
11. 14. Drop the course table.

For DEPARTMENT table:

1. Add a new column phone_no of type VARCHAR(15).
2. Add a new column hod_name of type VARCHAR(30).
3. Modify the data type of building from VARCHAR(20) to VARCHAR(40).
4. Modify the data type of budget to DECIMAL(15,2).

5. Rename the column phone_no to contact_no.
6. Rename the column hod_name to head_name.
7. Drop the contact_no column.
8. Rename the table department to department_details.
9. Rename it back to department.
10. Drop the table.

For TIME_SLOT table:

1. Add a column duration of type INT.
2. Add a column room_no of type INT.
3. Modify the data type of day to VARCHAR(10).
4. Modify the data type of duration to SMALLINT.
5. Rename the column room_no to room_number.
6. Rename the column duration to period_duration.
7. Delete the period_duration column.
8. Display the table structure after every modification.
9. Rename the table time_slot to class_schedule.
10. Rename it back to time_slot.
11. Drop the table.