



Chandigarh Engineering College Jhanjeri

Mohali-140307

Department of Artificial Intelligence (AI) and Data Sciences

Practical File

Database Management System (DMS)

Subject Code: CSE-204P

BACHELOR OF TECHNOLOGY
Artificial Intelligence and Data Sciences



SUBMITTED BY:

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Experiment-1

Experiment Name:

Introduction to SQL and database creation

Objective:

To learn basic SQL commands

Prerequisites:

- Basic computer and OS knowledge.
- Familiarity with data concepts (tables, fields).

Key Terms: SQL, DML, DDL

System requirements:

- 4-8 GB RAM, 10-15 disk space, Windows OS
- MySQL Workbench 8.0 CE

Theory and Application:

SQL stands for Structured Query Language. It's a language that we use to talk to database. In SQL we can store, update, retrieve and delete information from the database whenever we need it.

For example, apps like banking systems, college portals, e-commerce platforms, and social media use SQL in the background to manage huge amount of data.

SQL works with relational database systems such as:

- MySQL
- PostgreSQL
- Oracle
- SQL Server
- SQLite

A database is simply a place where data is stored in an organized way so it can be used later. Instead of keeping information on paper or in a random file, a database stores it nearly in tables.

For example, a college database may keep data about:

- Students
- Marks
- Courses
- Attendance

All these are related and can be connected to each other, which makes retrieving information fast and efficient.



❖ MySQL

MySQL is an open-source relational database management system (RDBMS) that uses SQL to store and manage data. It has become one of the most popular database systems because it is fast, reliable, secure, and free to use. For this reason, MySQL is widely used in websites, software applications, and online services.

MySQL stores data in tables, which are organized into rows and columns. Different tables can be linked together through keys, making it easier to structure and retrieve related information.

Key Features of MySQL

- Open-source: Anyone can download and use it without cost.
- Relational: Data is stored in tables and can be linked through relationships.
- SQL-based: Uses SQL commands for all major operations.
- Scalable & Efficient: Handles large amounts of data without performance issues.
- Cross-platform: Runs on Windows, macOS, Linux, and other systems.
- Secure: Allows access control through authentication and privileges.
- High Performance: Well-optimized for applications that read data frequently, such as websites.

Where MySQL is Used

MySQL is commonly used in:

- Web applications
- E-commerce platforms
- Content management systems (CMS)
- Banking and finance
- Educational institutions
- Inventory and billing systems

Advantages of MySQL

- Free and open-source
- Easy to use and beginner-friendly
- Works well with large data
- Cross-platform and portable



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MySQL – Opening a existing connection

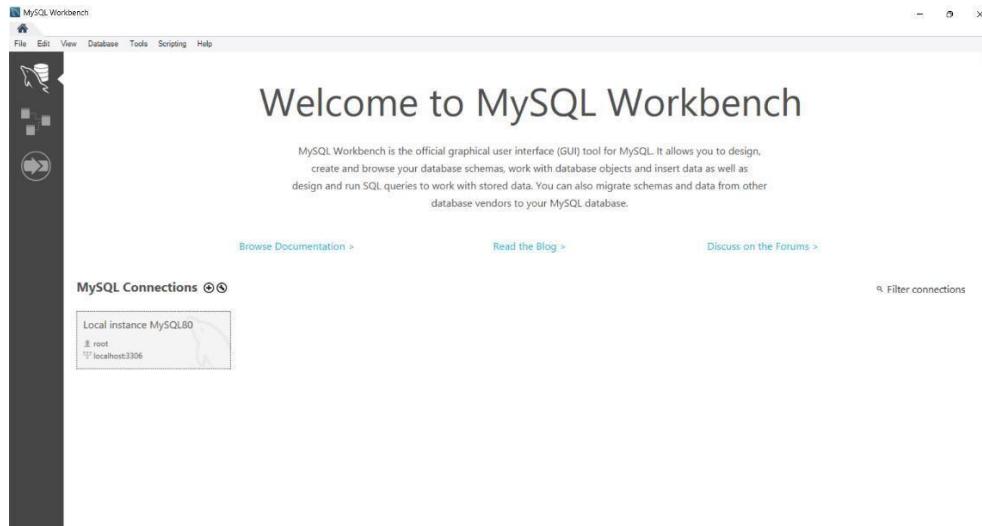


Figure 1: Opening existing connection

MySQL – Login

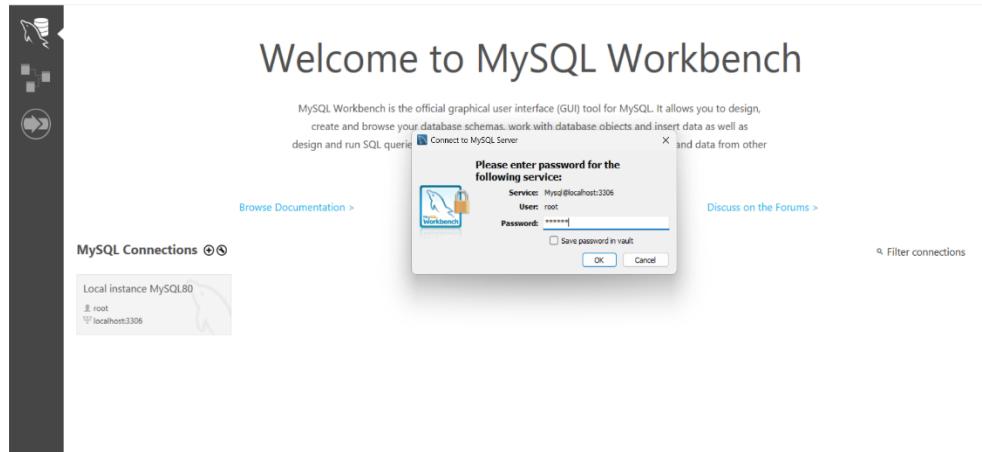


Figure 2: MySQL login

Basic SQL commands:

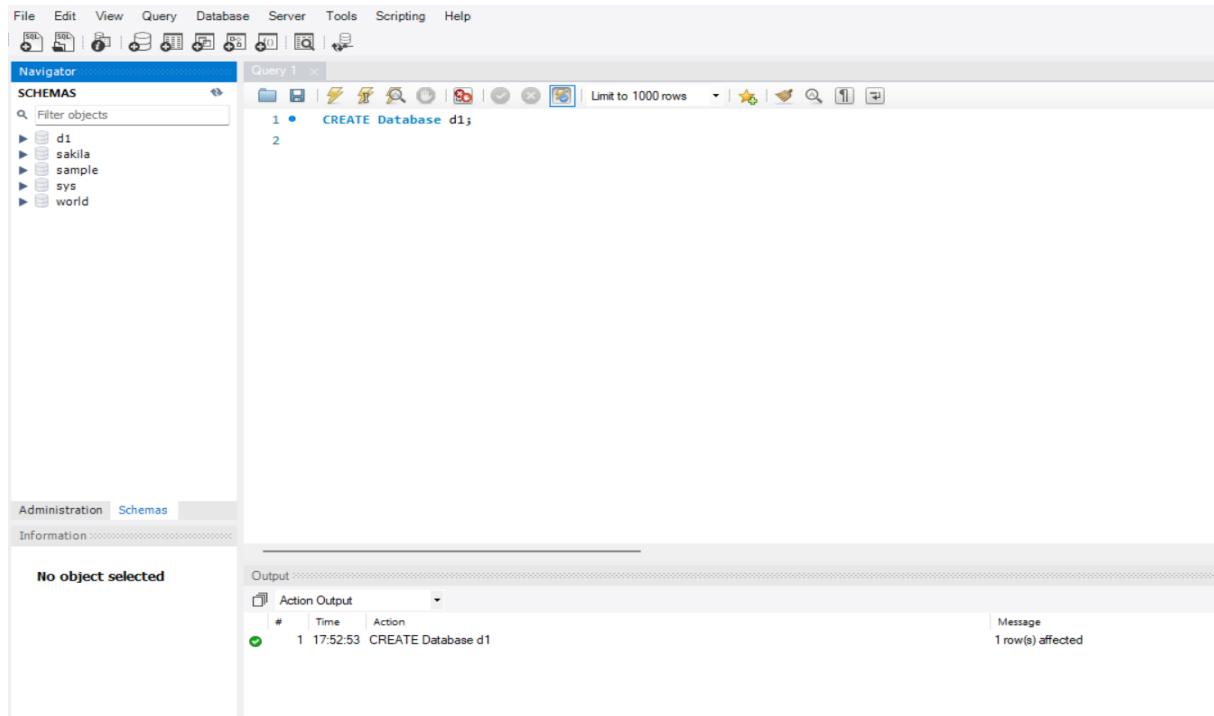
- 1. CREATE**
- 2. DROP**



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➤ **CREATE & DROP Database**

- CREATE database d1; (#Run the query)



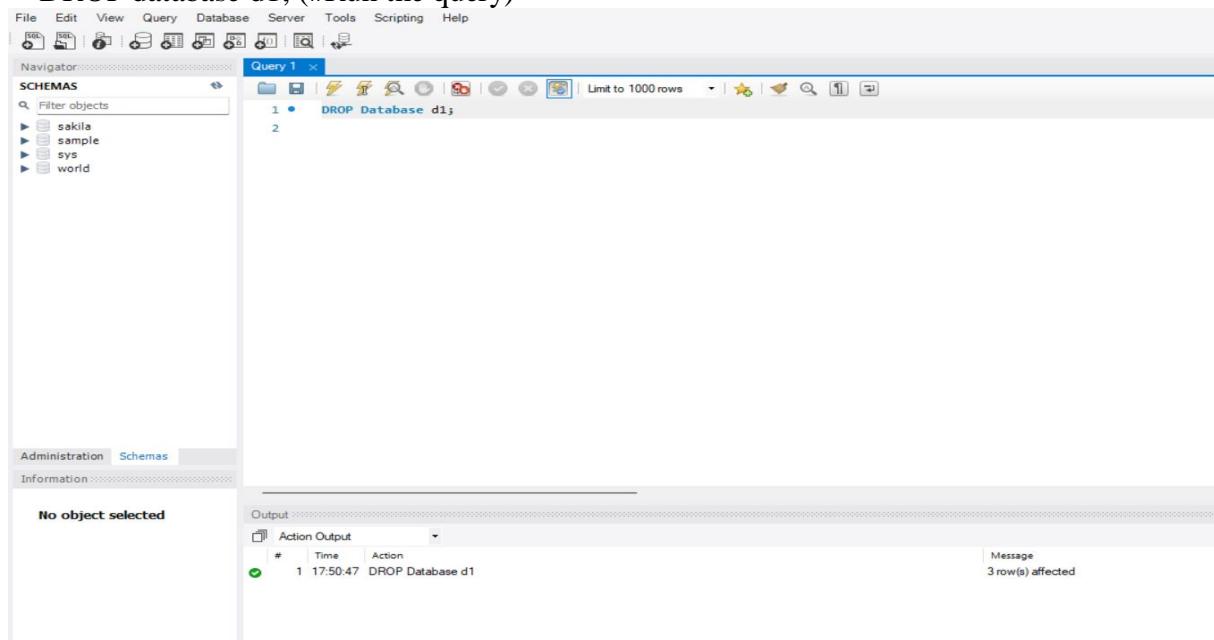
The screenshot shows the MySQL Workbench interface. In the top menu bar, the 'Query' tab is selected. Below it, the 'Navigator' pane shows the 'SCHEMAS' section with databases: d1, sakila, sample, sys, and world. The main query editor window contains the command: 'CREATE Database d1;'. The 'Output' pane at the bottom shows the execution log:

#	Time	Action
1	17:52:53	CREATE Database d1

Message: 1 row(s) affected.

Figure 3:Creating a database

- DROP database d1; (#Run the query)



The screenshot shows the MySQL Workbench interface. In the top menu bar, the 'Query' tab is selected. Below it, the 'Navigator' pane shows the 'SCHEMAS' section with databases: sakila, sample, sys, and world. The main query editor window contains the command: 'DROP Database d1;'. The 'Output' pane at the bottom shows the execution log:

#	Time	Action
1	17:50:47	DROP Database d1

Message: 3 row(s) affected.

Figure 4:Drop a database



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➤ **Creating a table in database**

```
CREATE database d1;
```

```
USE d1;
```

```
CREATE table Students(name varchar(100), roll_no int, DOB int, Stream varchar(100));
```

The screenshot shows the MySQL Workbench interface. In the top-left corner, the CEC logo is visible. The main window has a 'Query 1' tab open with the following SQL code:

```
1 CREATE Database d1;
2 USE d1;
3 CREATE table Students( Name varchar(20), Roll_no int, DOB int, Stream varchar(30));
```

Below the query editor, the 'Information' pane shows the 'No object selected'. On the left, the 'Navigator' pane displays the 'SCHEMAS' section with 'd1' selected, and within 'd1', the 'Tables' section shows a single table named 'Students' with columns: Name, Roll_no, DOB, and Stream. The 'Output' pane at the bottom right shows the execution log:

Action Output	Time	Action	Message
1	18:03:14	CREATE Database d1	1 row(s) affected
2	18:03:14	USE d1	0 row(s) affected
3	18:03:14	CREATE table Students(Name varchar(20), Roll_no int, DOB int, Stream varchar(30))	0 row(s) affected

Figure 5:Creating a table

➤ **Describing a table in database**

```
describe table db.Students;
```

The screenshot shows the MySQL Workbench interface. The 'Navigator' pane on the left shows the 'SCHEMAS' section with 'd1' selected, and within 'd1', the 'Tables' section shows the 'Students' table with its columns: Name, Roll_no, DOB, and Stream. The 'Information' pane at the bottom left shows the 'No object selected'. The 'Output' pane at the bottom right shows the execution log:

Action Output	Time	Action	Message
1	18:03:14	CREATE Database d1	1 row(s) affected
2	18:03:14	USE d1	0 row(s) affected
3	18:03:14	DESCRIBE Students;	0 row(s) affected

Figure 6:Output in MySQL



```
MySQL 8.0 Command Line Cli  +  -  X
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 23
Server version: 8.0.44 MySQL Community Server - GPL

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> describe table d1.students;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| id | select_type | table | partitions | type | possible_keys | key | key_len | ref | rows | filtered | Extra |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | SIMPLE     | students | NULL      | ALL   | NULL          | NULL | NULL    | NULL | 1    | 100.00 | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set, 1 warning (0.00 sec)

mysql> |
```

Figure 7:Output in Command Line Client