

## Lab #1 : Introduction to MySQL, its datatypes and its installation

### 1. Objective

- Understand the basic concepts and purpose of Relational Database Management Systems (RDBMS).
- Install and configure MySQL Server and MySQL Workbench.
- Identify and use different MySQL data types.
- Create databases and tables using SQL commands.

### 2. Required Software and Tools

MySQL Community Server	Version 8.0 or higher
MySQL Workbench (or XAMPP, phpMyAdmin)	GUI client for database management

### 3. Background Theory

#### 3.1 What is an RDBMS?

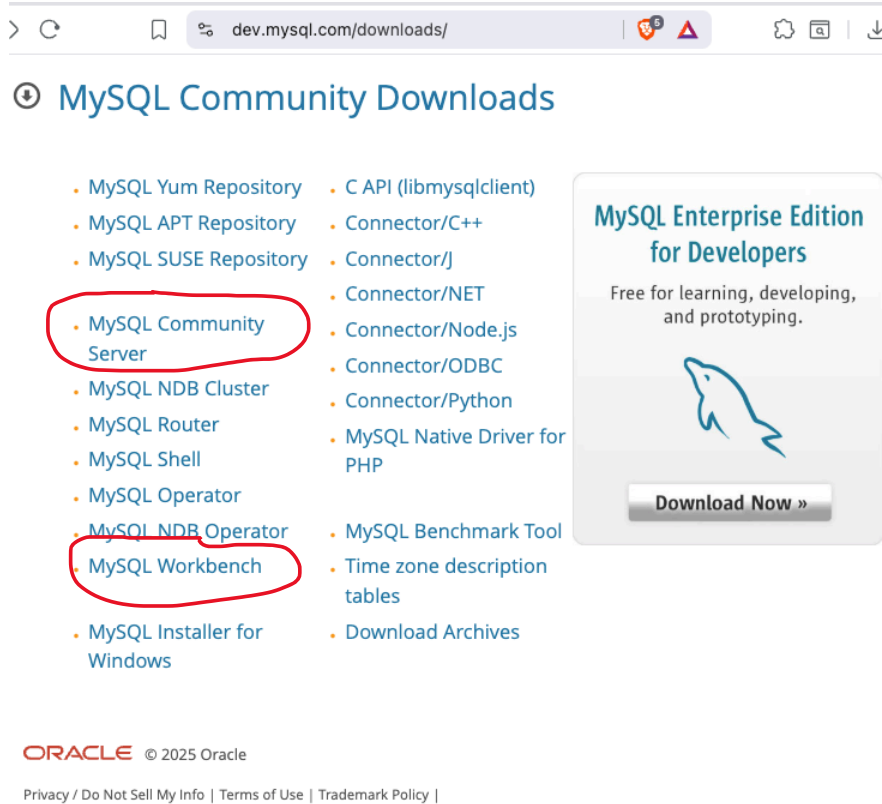
A Relational Database Management System (RDBMS) stores data in tables (rows and columns) and allows data manipulation using SQL. Examples: MySQL, PostgreSQL, Oracle, MS SQL Server.

#### 3.2 Introduction to MySQL

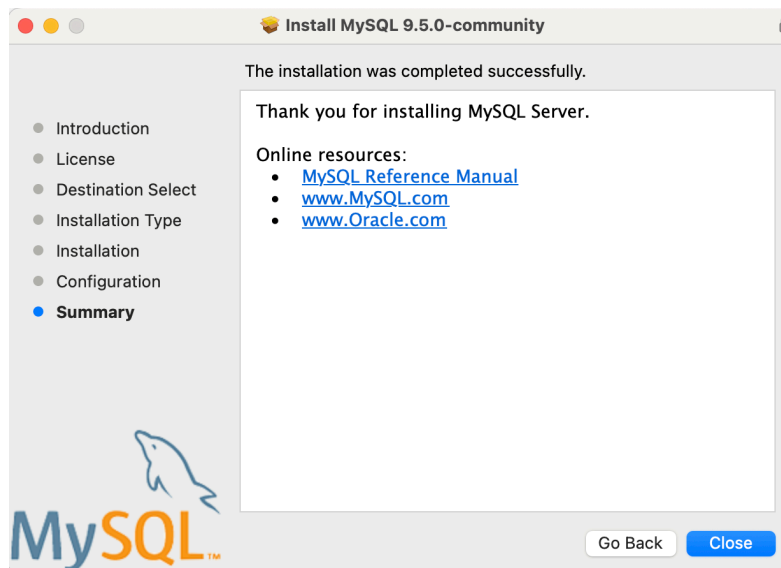
MySQL is an open-source RDBMS developed by Oracle Corporation. It uses SQL for data access and follows a client-server architecture where MySQL Server manages databases and MySQL Workbench acts as a GUI client.

## 4. Installation Steps (MySQL Server and Workbench)

1. Download MySQL Installer from <https://dev.mysql.com/downloads/> and then install.



Note your password while installing MySQL ( e.g root123!)



## 5. MySQL Data Types

Category	Data Type	Example	Description
Numeric	INT, BIGINT, SMALLINT	10	Whole numbers
Decimal	DECIMAL(p,s), NUMERIC(p,s)	15.75	Fixed precision decimal
Floating	FLOAT, DOUBLE	12.567	Approximate numeric values
String	CHAR(n), VARCHAR(n)	'Pokhara'	Fixed/variable-length string
Text	TEXT, LONGTEXT	Essay text	Long text strings
Date & Time	DATE, TIME, DATETIME	'2025-11-09' '2025-11-09 11:22:33'	Date/time values
Boolean	BOOLEAN, BIT	1 / 0	True/False
Binary	BLOB	image data	Binary large objects

## 6. Lab Exercises

### 6.1 Start and login Server

#### Start /Stop the MySQL server(MacOS)

```
sudo /usr/local/mysql/support-files/mysql.server start
sudo /usr/local/mysql/support-files/mysql.server stop
```

#### Setup PATH

**Edit shell configuration file:** nano ~/.zshrc

**Add this line:** export PATH=/usr/local/mysql/bin:\$PATH

**Save and reload:** source ~/.zshrc

#### Login to MySQL

```
mysql -u root -p
```

### 6.2 Run MySQL queries

- Create a Database

```
CREATE DATABASE collegeDB;
USE collegeDB;
```

- Create a Table

```
CREATE TABLE students (
    StusentID INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(50) NOT NULL,
    age INT,
    dob DATE,
```

```
        address VARCHAR(100)
    );
```

- Insert Records

```
INSERT INTO students (name, age, dob, address)
VALUES ('Bidur Devkota', 21, '2004-05-14', 'Pokhara');
(insert your own name here)
```

- Display Records

```
SELECT * FROM students;
```

- Describe Table

```
DESCRIBE students;
```

- Create Table class with name, class\_roll\_num, enrollment\_year and insert your own data.

## 7. Observation Table

Command Executed	Description	Output Screenshot	Remarks

## 8. Result

- MySQL and MySQL Workbench successfully installed.
- Database and tables created.
- Basic SQL commands executed successfully.
- MySQL data types understood and tested.

## 9. Conclusion

In this lab, we learned about the MySQL RDBMS environment, its installation, and data types. We created databases and tables, inserted records, and retrieved data using SQL commands.