**Lab Exercise 1 - Exploring Data Types in MySQL**

**Objective:**

To understand and practice the use of various **data types** in MySQL including numeric, string, date/time, and boolean types.

**Software Required:**

* MySQL Server (or MySQL Workbench / phpMyAdmin)
* Any SQL client or terminal access to run MySQL queries

**Step-by-Step Tasks:**

**Task 1: Create a Database**

CREATE DATABASE Lab\_DataTypes;

USE Lab\_DataTypes;

**Task 2: Create a Table with Different Data Types**

Create a table named Employee that includes a variety of MySQL data types.

CREATE TABLE Employee (

emp\_id INT PRIMARY KEY,

emp\_name VARCHAR(50),

emp\_email VARCHAR(100),

emp\_salary DECIMAL(10,2),

emp\_join\_date DATE,

emp\_join\_time TIME,

emp\_is\_active BOOLEAN,

emp\_performance\_rating FLOAT,

emp\_dob DATETIME,

emp\_gender ENUM('Male', 'Female', 'Other')

);

**Explanation of Data Types Used:**

* INT – Integer value for employee ID
* VARCHAR – String for name and email
* DECIMAL – Precise salary value
* DATE, TIME, DATETIME – Different date/time formats
* BOOLEAN – True/False (stored as TINYINT 1/0)
* FLOAT – Floating point number for ratings
* ENUM – Fixed set of values for gender

**Task 3: Insert Records**

Insert a few sample records using various data types.

INSERT INTO Employee

(emp\_id, emp\_name, emp\_email, emp\_salary, emp\_join\_date, emp\_join\_time, emp\_is\_active, emp\_performance\_rating, emp\_dob, emp\_gender)

VALUES

(101, 'Alice', 'alice@example.com', 55000.50, '2023-01-10', '09:30:00', TRUE, 4.5, '1990-03-25 00:00:00', 'Female'),

(102, 'Bob', 'bob@example.com', 62000.75, '2022-07-05', '10:15:00', FALSE, 3.8, '1988-11-13 00:00:00', 'Male');

**Task 4: Retrieve Data**

Retrieve the data to verify that data types are stored correctly.

SELECT \* FROM Employee;

**Task 5: Modify Table (Optional Extension)**

Add a new column emp\_phone with the CHAR data type.

ALTER TABLE Employee ADD emp\_phone CHAR(10);

Update phone numbers:

UPDATE Employee SET emp\_phone = '9876543210' WHERE emp\_id = 101;

UPDATE Employee SET emp\_phone = '9123456789' WHERE emp\_id = 102;

**Task 6: Query with Conditions Based on Data Types**

* List employees who joined after 2022:

SELECT emp\_name, emp\_join\_date FROM Employee WHERE emp\_join\_date > '2022-01-01';

* List active employees:

SELECT emp\_name FROM Employee WHERE emp\_is\_active = TRUE;

* Find employees with a rating greater than 4:

SELECT emp\_name, emp\_performance\_rating FROM Employee WHERE emp\_performance\_rating > 4;

**Learning Outcomes:**

After completing this lab, you should be able to:

* Identify and apply different MySQL data types
* Use appropriate types for various kinds of data (text, numbers, dates, etc.)
* Perform CRUD operations involving different data types
* Understand the importance of choosing correct data types for performance and accuracy