

# MySQL with Python

## Module 1: Introduction to Databases & MySQL

- What is a database?
- RDBMS overview
- SQL vs NoSQL
- Introduction to MySQL:
  - Features and use cases
  - Installing MySQL server & Workbench
- Introduction to MySQL shell and CLI

## Module 2: Python and MySQL Setup

- Installing MySQL Connector for Python (mysql-connector-python)
- Setting up database connectivity
- Establishing and closing connection using Python
- Executing basic SQL statements using Python

## Module 3: Basic SQL Operations (via Python)

- Creating databases and tables
- Inserting records into tables
- Retrieving data (SELECT)
- Filtering records using WHERE, LIKE, etc.
- Sorting results (ORDER BY)
- Updating and deleting records (UPDATE, DELETE)

## Module 4: Query Parameters and Security

- Using placeholders (%s) for safe queries
- Preventing SQL injection
- Dynamic SQL queries
- Commit and rollback with Python

## Module 5: Advanced SQL with Python Integration

- Working with multiple tables (JOINS):
  - INNER JOIN, LEFT JOIN, RIGHT JOIN
- Grouping and aggregation:
  - GROUP BY, HAVING, COUNT, SUM, etc.
- Subqueries and nested queries
- Views and stored procedures (calling via Python)

## Module 6: Transactions and Error Handling

- Understanding transactions
- `commit()` and `rollback()` in Python

- Handling database exceptions with try-except
- Ensuring data integrity

### **Module 7: Working with Files and Databases**

- Importing CSV/Excel data into MySQL using Python
- Exporting query results to files (CSV, JSON)
- Bulk insert from files using Python

### **Module 8: CRUD Operations via Python GUI (Optional)**

- Creating a simple Tkinter or PyQt GUI for:
  - Inserting user data
  - Displaying records
  - Updating and deleting entries
- Connecting GUI elements to MySQL backend

=====

**END**

=====