

# Introduction to MySQL Programming

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# Overview of MySQL

- What is MySQL:
  - An open-source relational database management system (RDBMS) that uses SQL to store, manage, and retrieve data.
- MySQL Architecture:
  - Follows a client-server model with components like the MySQL Server (processing queries), storage engines (InnoDB, MyISAM), and client programs.
- MySQL Tools (Workbench / CLI):
  - MySQL Workbench provides a GUI for database design and administration; the MySQL Command-Line Client allows executing SQL commands directly.

# Basic SQL in MySQL

- Data Definition Language (DDL)
- Data Manipulation Language (DML)
- Data Control Language (DCL)

# MySQL Data Types

- Numeric
- String
- Date/Time

# MySQL Programming Elements

- **Variables** – Store temporary data for use within queries or stored programs.
- **Comments** – Add explanations or notes inside SQL code without affecting execution.
- **Control Flow Statements** – Direct the logic of execution using IF, CASE, LOOP, WHILE, and REPEAT.
- **Cursors** – Retrieve and process rows from a query result set one at a time.
- **Condition Handlers (Error Handling)** – Catch and handle errors or warnings during execution.
- **Stored Routines (Procedures/Functions)** – Group reusable SQL code blocks for repeated tasks.
- **Triggers** – Automatically run code in response to INSERT, UPDATE, or DELETE events on tables.