MySQL - Course Details

Course Objective

The primary objective of this course is to equip learners with a comprehensive understanding of MySQL, one of the most popular and widely used open-source relational database management systems.

The course is structured to provide foundational knowledge for beginners and deepen the expertise of professionals, enabling them to effectively design, manage, and optimize MySQL databases in real-world environments.

Course Content

Introduction to Databases & MySQL

- What is a database?
- Introduction to RDBMS
- What is SQL?
- Overview of MySQL and its ecosystem
- Installing MySQL and MySQL Workbench
- Connecting to MySQL using GUI and CLI

Basic SQL Operations

- Creating databases and tables
- MySQL data types (numeric, string, date/time)
- Inserting data (INSERT)
- Retrieving data (SELECT)
- Filtering data (WHERE, AND, OR, NOT)
- Sorting data (ORDER BY)
- Limiting results (LIMIT, OFFSET)
- Updating records (UPDATE)

- Deleting records (DELETE)

Intermediate Querying

- Using aliases (AS)
- Built-in functions (string, numeric, date/time)
- Aggregate functions (SUM, COUNT, AVG, MIN, MAX)
- Grouping results (GROUP BY, HAVING)
- Conditional expressions (IF, CASE)
- Operators and expressions

Joins and Relationships

- Understanding relationships
- INNER JOIN
- LEFT JOIN, RIGHT JOIN
- FULL JOIN (workarounds in MySQL)
- CROSS JOIN
- Self-join
- Multi-table queries

Data Modeling Basics

- Primary keys and foreign keys
- Constraints (NOT NULL, UNIQUE, DEFAULT, CHECK)
- Normalization (1NF, 2NF, 3NF)
- ER diagrams (using MySQL Workbench)

Advanced SQL Queries

- Subqueries (single-row, multi-row, correlated)
- Common Table Expressions (CTEs) – from MySQL 8+
- Views – creating and managing

- Working with NULL values
- Window functions (RANK, ROW_NUMBER, LAG, LEAD)

Stored Routines

- Stored procedures and functions
- Parameters (IN, OUT, INOUT)
- Flow control (IF, CASE, loops)
- Error handling (DECLARE, HANDLER)
- Best practices in writing procedures

Triggers and Events

- Introduction to triggers
- BEFORE and AFTER triggers
- Use cases for triggers
- Scheduled events in MySQL
- Automating tasks with events

Transactions and Locking

- Understanding ACID properties
- Transaction control (START, COMMIT, ROLLBACK)
- Isolation levels (READ COMMITTED, REPEATABLE READ, etc.)
- Concurrency control and locking
- Deadlocks and how to avoid them

Indexing and Performance Tuning

- Index types in MySQL (PRIMARY, UNIQUE, FULLTEXT)
- EXPLAIN and EXPLAIN ANALYZE
- Query optimization techniques
- Partitioning tables, Performance schema overview

Total Duration of the Course

- Total duration: 1 month(s)
- Days: Monday to Friday (1 hr daily)
- Mode: Online

Certificate

A course completion certificate will be awarded once you have successfully completed this course.

Wishing you a Smooth Coding ahead!
