

V TechLabs



MySQL

SYLLABUS

Month 1 : Introduction of MySQL & Basics

► Week 1 – Introduction & Basic Commands

■ Day 1 : Introduction to Databases & MySQL

- What is a Database?
- Difference between DBMS & RDBMS
- Installing MySQL and MySQL Workbench
- SQL vs MySQL

■ Day 2 : MySQL Environment Setup

- Creating and selecting a database
- Creating tables
- Understanding column data types
- Basic MySQL CLI and GUI usage

■ Day 3 : Inserting & Retrieving Data

- `INSERT INTO`
- `SELECT * FROM`
- Using `WHERE` for filtering
- Sorting with `ORDER BY`

■ Day 4 : Filtering with Conditions

- `AND`, `OR`, `NOT`, `IN`, `BETWEEN`, `LIKE`
- Using `DISTINCT`
- Null value handling

■ Day 5 : Updating and Deleting Records

- `UPDATE` statement
- `DELETE` statement
- Dropping tables and databases

► Week 2 – Functions, Filtering, and Grouping

■ Day 6 : Aggregate Functions

- COUNT(), SUM(), AVG(), MIN(), MAX()
- Combining with GROUP BY

■ Day 7 : Grouping & Filtering

- GROUP BY with multiple columns
- HAVING vs WHERE

■ Day 8 : String Functions

- CONCAT(), UPPER(), LOWER(), LENGTH(), SUBSTRING()

■ Day 9 : Numeric and Date Functions

- ROUND(), CEIL(), FLOOR()
- NOW(), CURDATE(), DATE_ADD(), DATEDIFF()

■ Day 10 : Practice

- Real-world queries (Student/Employee Database)
- Combine filters, sorting, and functions

► Week 3 – Joins & Subqueries

■ Day 11 : Introduction to Joins

- What are joins?
- INNER JOIN with example

■ Day 12 : LEFT, RIGHT Joins

- LEFT JOIN, RIGHT JOIN
- Comparing with INNER JOIN

■ Day 13 : FULL JOIN & Self Join

- Simulating FULL JOIN using UNION
- SELF JOIN use case (e.g. employee-manager)

■ Day 14 : Subqueries

- Simple subqueries
- IN, EXISTS, NOT EXISTS

■ Day 15 : Practice Queries with Joins & Subqueries

- Mix multiple joins and nested queries

► Week 4 – Data Modeling & Schema Management

■ Day 16 : Constraints

- PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, DEFAULT

■ Day 18 : ENUM, SET, AUTO_INCREMENT

- Creating tables with special types
- Using auto-increment for IDs

■ Day 20 : Mini Project Setup

- Design a mini student registration system
- Create tables with constraints and insert data

■ Day 17 : Table Alteration

- ALTER TABLE to add/modify/drop columns
- Modifying constraints

■ Day 19 : Views

- CREATE VIEW, REPLACE VIEW, DROP VIEW
- View with JOINS and filters

Month 2 : Intermediate SQL + Admin Features

► Week 5 – Advanced SQL Functions & Control

■ Day 21 : Conditional Logic in Queries

- CASE, IF(), IFNULL(), COALESCE()

■ Day 22 : Advanced Subqueries

- Correlated vs Non-correlated subqueries
- Subqueries in SELECT, FROM, WHERE

■ Day 23 : Stored Functions

- Creating and calling functions
- Returning values from functions

■ Day 24 : Stored Procedures

- CREATE PROCEDURE, CALL, parameters
- Control flow: IF, LOOP, WHILE

■ Day 25 : Practice with Stored Procedures

- Build stored procedures for data inserts and reports

► Week 6 – Transactions & Locking

■ Day 26 : Transactions in MySQL

- START TRANSACTION, COMMIT, ROLLBACK

■ Day 27 : Savepoints

- SAVEPOINT, ROLLBACK TO SAVEPOINT

■ Day 28 : Locks

- Implicit vs Explicit Locks
- Table-level read/write locks

■ Day 29 : Isolation Levels

- READ UNCOMMITTED, READ COMMITTED, REPEATABLE READ, SERIALIZABLE

■ Day 30 : Transaction Practice

- Banking or order system simulation using transactions

► Week 7 – MySQL Users & Security

■ Day 31 : User Management

- Creating users
- GRANT, REVOKE, SHOW GRANTS

■ Day 32 : Roles and Permissions

- Defining roles
- Assigning roles to users

■ Day 33 : Root User Security

- Changing password
- Restricting access to specific databases

■ Day 34 : Configuration and Security Files

- Editing my.cnf for basic security and tuning

■ Day 35 : Practice Access Control

- Setup environment with multiple users and roles

▶ Week 8 – Import, Export, Backup

■ Day 36 : Exporting Data

- Using mysqldump, SELECT INTO OUTFILE

■ Day 37 : Importing Data

- LOAD DATA INFILE, using Workbench to import SQL or CSV

■ Day 38 : Automation & Scheduling

- Backup using Cron
- Scheduled exports

■ Day 39 : Error Handling During Import/Export

- Fixing encoding, duplicate, and constraint errors

■ Day 40 : Backup & Restore Project Database

Month 3 : Advanced MySQL + Projects

▶ Week 9 – Performance Tuning

■ Day 41 : Query Optimization

- EXPLAIN, EXPLAIN ANALYZE

■ Day 42 : Indexing

- Single column and composite indexes
- Do's and Don'ts

■ Day 43 : Partitioning Tables

- Horizontal partitioning
- Benefits for big tables

■ Day 44 : Normalization

- 1NF, 2NF, 3NF, BCNF

■ Day 45 : Denormalization Techniques

- When and why to use
- Performance impacts

▶ Week 10 – Triggers & Events

■ Day 46 : Introduction to Triggers

- BEFORE INSERT, AFTER UPDATE examples

■ Day 47 : Use Cases of Triggers

- Data validation, logging, automation

■ Day 48 : Events in MySQL

- CREATE EVENT, SCHEDULE, DROP EVENT

■ Day 49 : Audit Trail Project with Triggers

- Log table changes automatically

■ Day 50 : Trigger & Event Practice

- Hands-on with real-time automation scripts

Week 11 – Project Work

▶ Day 51 : Project Design

- Choose project: Online Store / School DB
- Schema Design & Relationships

■ Day 52 : CRUD Implementation

- Insert, update, delete, fetch with joins

■ **Day 53 : Reporting & Analysis**

- Sales reports, User log reports

■ **Day 54 : Advanced Features**

- Stored Procedures, Views, Transactions in project

■ **Day 55 : Optimization & Backup**

- Index, export, import, final testing

► **Week 12 - Final Revision & Interview**

■ **Day 56 : Full SQL Recap**

- Commands Summary (DDL, DML, DCL, TCL)

■ **Day 57 : Practice Interview Q&A**

- 30+ Questions from Basic to Advanced

■ **Day 58 : Error Handling & Debugging**

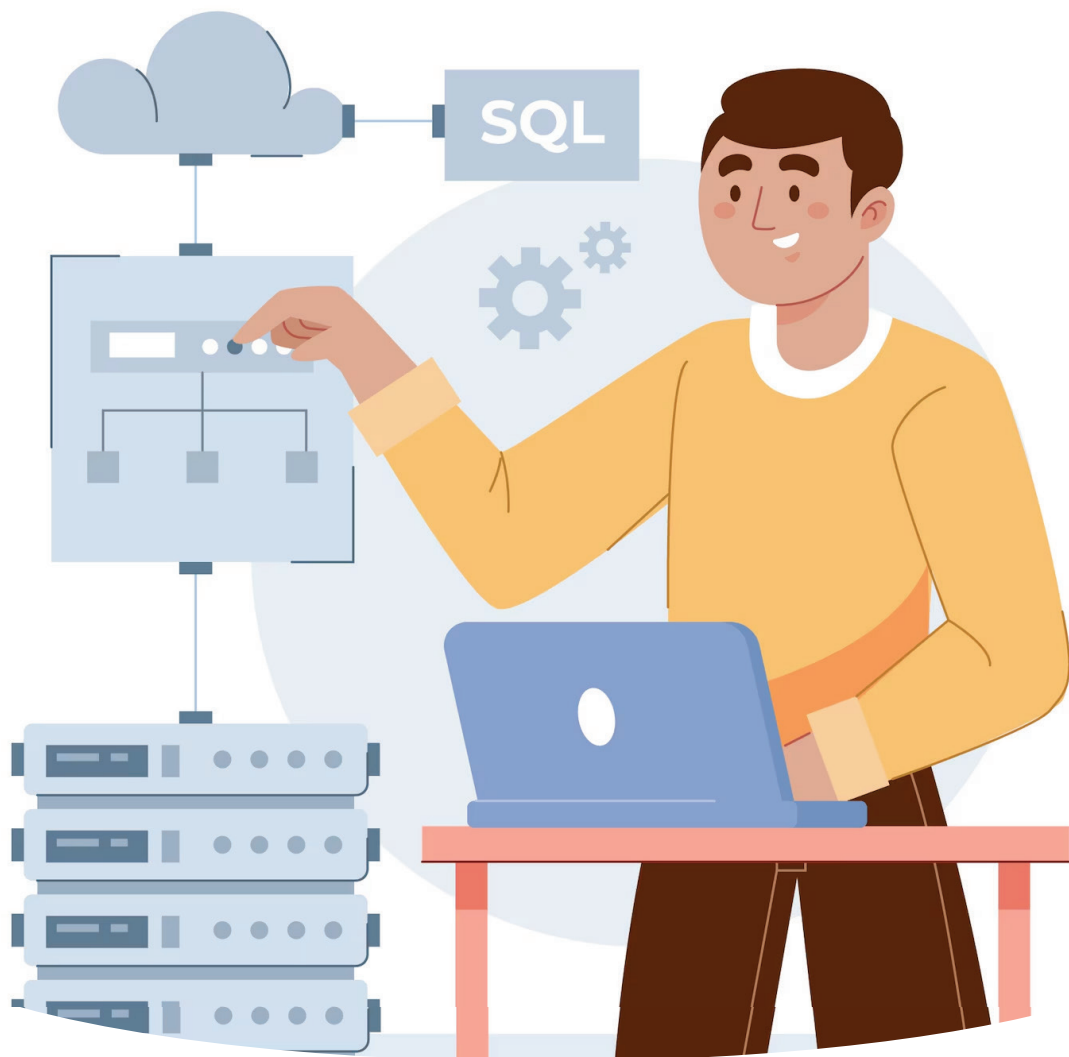
- Common mistakes and how to fix them

■ **Day 59 : Final Project Submission & Feedback**

- Review schema, code, performance

■ **Day 60 : Mock Test + Resume Tips**


- SQL Assessment
- Resume content tips for SQL job seekers





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