

# MySQL Training Program (2 Weeks)

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## Week 1 – Foundations

### Day 1 – Introduction to Databases & MySQL

Why Learn: Understand RDBMS concepts and MySQL basics.

Tasks:

- Install MySQL / phpMyAdmin.
- Create and manage databases.
- Explore SHOW DATABASES and USE.

### Day 2 – Tables & Data Types

Why Learn: Learn to define schema and choose correct data types.

Tasks:

- Create tables with proper data types.
- Use CHAR, VARCHAR, TEXT, INT, DECIMAL, DATE, BOOLEAN.
- Alter and drop tables.

### Day 3 – CRUD Operations

Why Learn: CRUD is the foundation of database manipulation.

Tasks:

- INSERT, SELECT, UPDATE, DELETE.
- Insert multiple rows at once.
- Practice with WHERE conditions.

### Day 4 – Filtering & Sorting

Why Learn: Efficiently retrieve relevant data.

Tasks:

- Use WHERE, BETWEEN, LIKE, IN.
- Apply ORDER BY, LIMIT.
- Practice logical operators (AND, OR, NOT).

### Day 5 – Functions & Expressions

Why Learn: Use built-in functions for calculations.

Tasks:

- String functions (CONCAT, UPPER, LOWER).
- Date functions (NOW, DATE\_ADD).
- Numeric functions (ROUND, ABS).

## Day 6 – Joins (Part 1)

Why Learn: Combine data across tables.

Tasks:

- INNER JOIN with examples.
- LEFT JOIN for optional relations.
- Simple multi-table joins.

## Day 7 – Joins (Part 2) & Subqueries

Why Learn: Advanced querying patterns.

Tasks:

- RIGHT JOIN & FULL OUTER JOIN.
- Nested SELECT queries.
- Use subqueries in WHERE.



## Week 2 – Advanced Features

### Day 8 – Aggregations & Grouping

Why Learn: Summarize large datasets.

Tasks:

- COUNT, SUM, AVG, MIN, MAX.
- GROUP BY with aggregates.
- Use HAVING for group filters.

### Day 9 – Indexing & Performance

Why Learn: Speed up queries on large datasets.

Tasks:

- Create indexes on columns.
- Analyze queries with EXPLAIN.
- Drop unused indexes.

### Day 10 – Constraints & Keys

Why Learn: Maintain data integrity.

Tasks:

- Primary key, foreign key.
- UNIQUE and NOT NULL.
- ON DELETE CASCADE.

## Day 11 – Transactions

Why Learn: Ensure data consistency.

Tasks:

- Start, commit, rollback.
- ACID properties.
- Example: bank transfer transaction.

## Day 12 – Views & Stored Procedures

Why Learn: Reuse logic and simplify queries.

Tasks:

- Create and query views.
- Write stored procedures with parameters.
- Use DELIMITER for procedures.

## Day 13 – Triggers & Events

Why Learn: Automate database tasks.

Tasks:

- Create a trigger on INSERT.
- Before vs After triggers.
- Create scheduled events.

## Day 14 – Security, Backup & Capstone Project

Why Learn: Secure and manage real-world DBs.

Tasks:

- Manage users and privileges (GRANT, REVOKE).
- Backup and restore with mysqldump.
- Capstone: Design and query a Library / E-commerce Database with users, products, orders, payments.