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| **MySQL Training Course (2 Days)** |  |

**Day 1: Basic MySQL (8 hours)**

**1. Introduction to MySQL (1 hour)**

* Overview of MySQL
* Installing MySQL
* MySQL Workbench and command-line interface
* Basic SQL syntax

**2. MySQL Data Types and Schemas (1 hour)**

* Data types (numeric, string, date and time)
* Creating and using databases
* Creating and modifying tables
* Understanding schemas

**3. Basic SQL Operations (1.5 hours)**

* Inserting data
* Querying data (SELECT statements)
* Filtering data (WHERE clause)
* Sorting data (ORDER BY clause)
* Updating data
* Deleting data

**4. SQL Functions and Expressions (1.5 hours)**

* Aggregate functions (COUNT, SUM, AVG, MIN, MAX)
* String functions (CONCAT, LENGTH, SUBSTRING)
* Date and time functions (NOW, CURDATE, DATEDIFF)
* Mathematical functions

**5. Joining Tables (2 hours)**

* INNER JOIN
* LEFT JOIN
* RIGHT JOIN
* FULL JOIN
* Cross joins and self joins

**6. Indexes and Constraints (1 hour)**

* Primary keys
* Foreign keys
* Unique and not null constraints
* Creating and using indexes

**7. Basic MySQL Administration (1 hour)**

* User management (creating users, granting privileges)
* Database backup and restore
* Basic performance tuning

**Day 2: Advanced MySQL (8 hours)**

**1. Advanced SQL Queries (1.5 hours)**

* Subqueries and nested queries
* Common table expressions (CTEs)
* Window functions
* Advanced filtering and search techniques (LIKE, REGEXP)

**2. Stored Procedures and Functions (1.5 hours)**

* Creating and using stored procedures
* Creating and using stored functions
* Parameters and return types
* Error handling in stored procedures

**3. Triggers and Events (1.5 hours)**

* Creating and managing triggers
* BEFORE and AFTER triggers
* Scheduled events
* Practical use cases

**4. Transactions and Concurrency (1.5 hours)**

* Understanding transactions
* COMMIT and ROLLBACK
* Isolation levels
* Locking mechanisms and deadlocks

**5. Advanced Indexing and Optimization (1 hour)**

* Advanced indexing techniques
* Query optimization
* Analyzing and understanding query execution plans
* Performance tuning tips

**6. MySQL Security (1 hour)**

* Securing MySQL installation
* User roles and permissions
* Data encryption (at rest and in transit)
* Best security practices

**7. MySQL Replication and High Availability (1 hour)**

* Setting up replication (master-slave, master-master)
* Monitoring and troubleshooting replication
* High availability solutions
* Backup strategies for high availability

**8. Hands-on Lab and Q&A (1 hour)**

* Practical exercises based on covered topics
* Real-world scenarios and problem-solving
* Open Q&A session