



Consulting and Training | Reach New Heights

Course Name

Mongo and MySQL (Customized Course)

Sector Name

Information Technology

Document Type

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Course Introduction

This training program from **BOOST** explores two industry-leading technologies, MySQL (a relational database) and MongoDB (a NoSQL document-based database).

Through a structured journey, participants will gain a deep understanding of both systems, their design philosophies, and how each can be used to address modern data challenges.

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Target Audience

- ✓ Software developers and backend engineers interested in database technologies
- ✓ Data architects and systems analysts
- ✓ IT professionals involved in data management or infrastructure planning
- ✓ Technical managers seeking to make informed database technology choices
- ✓ Computer science students and educators

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Learning Objectives

- ✓ Understand the fundamental principles and architectures of MySQL and MongoDB.
- ✓ Compare and contrast relational and NoSQL database systems.
- ✓ Analyze the internal mechanisms behind storage, indexing, and querying in both systems.
- ✓ Evaluate use cases where MySQL or MongoDB would be the better fit.
- ✓ Understand security, performance, and scalability features of both databases.
- ✓ Interpret schema design approaches and data integrity concepts in both models.
- ✓ Understand replication, backup, and disaster recovery methods used in MongoDB and MySQL.

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Course Outline

✓ Day 01

Introduction to Database Systems

- ✓ Overview of data management and database types
- ✓ Evolution of relational and NoSQL databases
- ✓ Positioning MySQL and MongoDB in the database ecosystem
- ✓ Summary of MongoDB and MySQL market usage

Exploring MySQL Fundamentals:

- ✓ MySQL architecture and core components
- ✓ Storage engines: InnoDB vs. MyISAM
- ✓ Data types and column constraints
- ✓ Understanding tables, indexes, and keys
- ✓ SQL basics: SELECT, INSERT, UPDATE, DELETE
- ✓ Query optimization fundamentals
- ✓ Transaction management and ACID compliance

Exploring MongoDB Fundamentals:

- ✓ MongoDB architecture and design principles
- ✓ BSON and JSON document structure
- ✓ Collections, documents, and embedded data
- ✓ MongoDB query language (MQL)
- ✓ CRUD operations and querying nested data

- ✓ Aggregation framework concepts
- ✓ Understanding BASE model and eventual consistency

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Course Outline

✓ Day 02

Data Modeling Approaches:

- ✓ Schema design in MySQL: normalization and relations
- ✓ Schema design in MongoDB: denormalization and embedding
- ✓ Data integrity: constraints vs. validation
- ✓ Relationships: foreign keys vs. document references
- ✓ Indexing strategies for performance in both systems
- ✓ Handling hierarchical data structures
- ✓ Modeling examples across both databases

Query Language and Syntax Comparison

- ✓ SQL queries and JOIN operations
- ✓ MongoDB aggregation and pipelines
- ✓ Filtering, sorting, and projection
- ✓ Conditional and logical operators
- ✓ Grouping, counting, and subqueries
- ✓ Full-text search comparison
- ✓ Performance trade-offs in query execution

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Course Outline

✓ Day 03

Transactions and Concurrency

- ✓ Transaction handling in MySQL
- ✓ Transactions in MongoDB (multi-document)
- ✓ Locking mechanisms and isolation levels
- ✓ Concurrency control and consistency
- ✓ Conflict resolution approaches
- ✓ Write concerns and durability
- ✓ Scenarios requiring transactional integrity

Replication and High Availability

- ✓ MySQL replication: master-slave and group replication
- ✓ MongoDB replication set architecture
- ✓ Failover and election mechanisms in MongoDB
- ✓ Read and write scaling strategies
- ✓ CAP theorem implications for both systems
- ✓ Monitoring replication lag and data consistency
- ✓ Load balancing and read preference

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Course Outline

✓ Day 04

Backup, Recovery, and Maintenance

- ✓ Backup strategies in MySQL (logical vs. physical)
- ✓ MongoDB backup methods and snapshotting
- ✓ Recovery procedures and restore methods
- ✓ Maintenance best practices
- ✓ Data integrity verification
- ✓ Downtime minimization during maintenance
- ✓ Backup automation and tools overview

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Course Outline

✓ Day 05

Security and Access Control

- ✓ User authentication and roles in MySQL
- ✓ Authentication mechanisms in MongoDB
- ✓ Role-based access control (RBAC) in both systems
- ✓ Encryption at rest and in transit
- ✓ SQL injection vs. NoSQL injection risks
- ✓ Auditing and activity logging
- ✓ Best practices for database hardening
- ✓ Practical Workshop

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Jan. 10, 2027	Jan. 14, 2027	5 days	4250.00 \$	KSA , Riyadh
Dec. 28, 2026	Jan. 1, 2027	5 days	4250.00 \$	UAE , Dubai
July 5, 2027	July 9, 2027	5 days	4250.00 \$	UAE , Dubai
Aug. 31, 2026	Sept. 4, 2026	5 days	4950.00 \$	Italy , Milan
Jan. 4, 2027	Jan. 8, 2027	5 days	4250.00 \$	UAE , Dubai

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