

Hands-on NoSQL Course Using MongoDB

FA-0491 · 2-day

Data & Analytics

Introduction

This comprehensive 2-day hands-on course is designed to provide participants with practical knowledge and skills in NoSQL databases, with a focus on MongoDB. The course will cover the fundamental concepts of NoSQL databases, data modeling, and query language specific to MongoDB. Participants will learn how to effectively design, implement, and manage NoSQL databases using MongoDB through a combination of theoretical explanations, practical examples, and hands-on exercises.

Course Duration: 2 Days

Prerequisites

To get the most out of this course, participants should have:

- Basic computer literacy and familiarity with operating systems (Windows, macOS, or Linux).
- Familiarity with fundamental database concepts and relational database management systems (RDBMS).
- Basic understanding of SQL and database querying concepts (though prior experience with NoSQL databases is not required).
- Familiarity with general programming concepts, although prior programming experience is not mandatory.
- Access to a computer with MongoDB installed or the ability to set up MongoDB locally.

Note: Participants with prior experience in databases, SQL, or programming will be able to build upon their existing knowledge, while those with limited or no experience will gain a solid foundation in NoSQL databases using MongoDB through the course.

Learning Outcome

Upon completion of this 2-day hands-on course on NoSQL using MongoDB, participants will be able to:

- Understand the fundamentals of NoSQL databases and the advantages they offer over traditional SQL databases.
- Comprehend the features and capabilities of MongoDB as a leading NoSQL database.
- Design efficient and flexible data models using document-oriented modeling principles in MongoDB.
- Perform CRUD operations (Create, Read, Update, Delete) in MongoDB, including querying and modifying documents.
- Utilize advanced querying techniques in MongoDB, such as aggregation pipelines and working with nested data.
- Implement effective data management strategies, including data import/export, backup, and restore in MongoDB.
- Optimize performance in MongoDB by understanding indexing, query optimization, and monitoring techniques.
- Administer MongoDB databases, including user management, security, and deployment considerations.
- Integrate MongoDB with applications, including connecting with programming languages and integrating with other systems.

Training outline

1. Introduction to NoSQL Databases and MongoDB

1. Understanding the evolution and advantages of NoSQL databases
2. Overview of MongoDB and its features
3. Differences between NoSQL and SQL databases

2. Installing and Setting Up MongoDB

1. Installing MongoDB on different platforms
2. Configuring MongoDB server and basic settings
3. Introduction to MongoDB Compass (GUI for MongoDB)

3. Data Modeling with MongoDB

1. Understanding NoSQL data modeling principles
2. Document-oriented data modeling in MongoDB

3. Designing efficient and flexible MongoDB schemas

4. CRUD Operations in MongoDB

1. Creating, reading, updating, and deleting documents in MongoDB
2. Querying documents using MongoDB query language
3. Indexing and optimizing MongoDB queries

5. Advanced MongoDB Querying

1. Aggregation framework in MongoDB
2. Performing complex queries and data manipulations
3. Working with arrays and nested documents

6. MongoDB Data Management

1. Data import and export using MongoDB tools
2. Backup and restore strategies in MongoDB
3. Replica sets and high availability in MongoDB

7. MongoDB Performance Optimization

1. Performance tuning techniques in MongoDB
2. Indexing strategies for improved query performance
3. Monitoring and profiling MongoDB databases

8. MongoDB Administration and Security

1. User management and access control in MongoDB
2. MongoDB authentication and security best practices
3. Deploying MongoDB in production environments

9. MongoDB and Application Integration

1. Connecting MongoDB with programming languages (e.g., Python, Node.js)
2. Using MongoDB in web applications
3. Integration with other data sources and systems

