

**Course Title: MongoDB for Java Developers**

**Duration : 2 days**

MongoDB is a leading NoSQL database solution. It uses a flexible schema, and stores data as JSON documents. MongoDB has a distributed architecture that can work with a large number of commodity servers in a cluster, and it supports partitioning (sharding) of data across servers as well as master-slave replication of data. As a result of these features, MongoDB is highly scalable, highly available with no single point of failure, and can store humongous volumes of data reliably and cost-economically.

This is a two-day in-depth program that gives the developers, data modelers and architects a good understanding of working with MongoDB using the MongoDB shell as well building applications using MongoDB Java driver. The program uses a blend of hands-on work and conceptual learning.

### Course Objectives

On completion of this program, the participants will have a good understanding of:

- Setting up MongoDB
- Working with collections and documents
- Inserting, updating, deleting and querying data
- Developing applications using MongoDB Java driver
- The MongoDB architecture
- Sharding (partitioning) and replication in MongoDB clusters

### Audience

Software developers, data modelers, application architects, solution architects.

## Course Outline

### Module 1: Introduction to MongoDB

- What is MongoDB?
- Collections and documents
- Understanding JSON
- Comparison with RDBMS
- Various deployment models

### Module 2: Getting Started with MongoDB

- Supported operating systems
- Downloading MongoDB
- Installing MongoDB
- Starting MongoDB services
- Basic configuration settings

### Module 3: CRUD Operations

- Inserting documents
- Sub-documents
- Querying documents with conditions
- Queries with projections
- Using various operators
- Sort, limit operations
- Updating documents
- Upsert operations
- Deleting documents
- Importing and exporting data

### Module 4: Indexes

- Creating indexes
- Query profiling and Query optimizer

### Module 5: Aggregation Framework

- Aggregation concepts
- Aggregation pipeline
- Map-Reduce

### Module 6: Schema Design

- Schema design case studies
- Schema design for various domains

### Module 7: MongoDB Drivers

- Introduction to MongoDB drivers and client libraries
- Examples of building applications using driver APIs

### Module 8: Replication

- Understanding replication
- Replica sets
- Configuring replica sets

### Module 9: Sharding

- Concepts of sharding (no hands-on work, only concepts)
- Impact of sharding on performance and scalability