

# MongoDB Data Modeling

**Course Description:** This comprehensive course offers an in-depth exploration of MongoDB, focusing on both foundational concepts and advanced schema design. Participants will gain hands-on experience with MongoDB Atlas, learn how to model data relationships effectively, and understand various schema design patterns and anti-patterns. The course also covers schema lifecycle management, including validation, evolution, and migration. By the end of the course, participants will be equipped with the skills needed to design efficient MongoDB schemas and manage MongoDB databases effectively.

**Duration :** 16 hours

## Target Audience :

- ✓ **Database Administrators:** Those who need to manage MongoDB databases and optimize their performance.
- ✓ **Developers:** Individuals who are looking to integrate MongoDB into their applications and need to understand schema design.
- ✓ **Data Architects:** Professionals involved in designing and managing complex data structures and relationships.
- ✓ **IT Professionals:** Those seeking to broaden their skills with NoSQL databases and MongoDB in particular.
- ✓ **Students and Newcomers:** Individuals interested in learning MongoDB for academic or career purposes.

## Prerequisites :

- ✓ Basic Understanding of NoSQL Databases (MongoDB preferred)
- ✓ Perform CRUD(Create, Read, Update, Delete) operations on NoSQL Data(MongoDB Preferred)

## Content Coverage :

### MongoDB Overview

- Introduction to MongoDB
- The MongoDB Document Model

### Getting Started with MongoDB Atlas

- Understand MongoDB Atlas and its features
- Setting up an Atlas account
- Managing Databases, Collections, and Documents in Atlas Data Explorer

### Identifying Database Workloads

- Identifying and Quantifying Entities
- Identifying Reads and Writes
- Quantifying Reads and Writes

### Modeling Data Relationships

- Identifying Relationships
- Embedding or Referencing
- Modeling One-to-One
- Modeling One-to-Many
- Modeling Many-to-Many

### Schema Design Patterns

- Inheritance Pattern
- Computed Pattern
- Approximation Pattern
- Extended Reference Pattern
- Schema Versioning Pattern

## Advanced Schema Design Patterns

- Single Collection Pattern
- Subset Pattern
- Bucket Pattern
- Outlier Pattern
- Archive Pattern

## Schema Design Anti Patterns

- Unbounded Arrays
- Bloated Documents
- Massive Number of Collections
- Unnecessary Indexes
- Data Normalization
- Case-Sensitivity

## Schema Lifecycle Management

- Schema Validation
- Schema Evolution
- Schema Migration