
MONGO DATABASE

1: Introduction to MongoDB

1.1. What is MongoDB?

- 1.1.1. Introduction to NoSQL Databases
- 1.1.2. MongoDB vs. Traditional RDBMS

1.2. History and Evolution

- 1.2.1. Origins of MongoDB
- 1.2.2. MongoDB Versions and Features

2: MongoDB Basics

2.1. Data Modeling in MongoDB

- 2.1.1. BSON Data Format
- 2.1.2. Document Structure and Collections

2.2. CRUD Operations

- 2.2.1. Inserting and Querying Documents
- 2.2.2. Updating and Deleting Documents

3: MongoDB Query Language

3.1. Basic Queries

- 3.1.1. Finding Documents
- 3.1.2. Query Operators (Comparison, Logical)

3.2. Aggregation Framework

- 3.2.1. Aggregation Pipeline Stages
- 3.2.2. Grouping and Projecting Results

4: Indexing and Performance Optimization

4.1. Indexing in MongoDB

- 4.1.1. Creating and Managing Indexes
- 4.1.2. Index Types and Use Cases



4.2. Query Optimization

- 4.2.1. Query Execution Plans
- 4.2.2. Profiling and Performance Tools

5: Data Modeling and Schema Design

5.1. Embedding vs. Referencing

- 5.1.1. Embedding Documents
- 5.1.2. Referencing Documents

5.2. Normalization and Denormalization

- 5.2.1. Strategies for Data Schema Design
- 5.2.2. Use Cases for Denormalization

6: Advanced MongoDB Features

6.1. Transactions

- 6.1.1. ACID Transactions in MongoDB
- 6.1.2. Implementing Multi-Document Transactions

6.2. Geospatial Indexing

- 6.2.1. Geospatial Queries and Indexing
- 6.2.2. Building Location-Based Applications

7: Security and Authentication

7.1. Authentication and Authorization

- 7.1.1. Role-Based Access Control
- 7.1.2. User Management and Permissions

7.2. Data Encryption

- 7.2.1. Encryption at Rest and in Transit
- 7.2.2. Securing Data in MongoDB

8: Scaling and High Availability**

8.1.Replication

- 8.1.1. Replica Sets and Failover
- 8.1.2. Configuring Replication

8.2.Sharding

- 8.2.1. Horizontal Scaling with Shards
- 8.2.2. Implementing Sharding

9: MongoDB in Real-World Applications

9.1.Web Applications

- 9.1.1. Building Web Apps with MongoDB
- 9.1.2. Integrating MongoDB with Frameworks

9.2.Big Data and Analytics

- 9.2.1. MongoDB for Data Analysis
- 9.2.2. Data Warehousing with MongoDB

10: Final Project and Course Review

10.1.Project Proposal and Planning

- 10.1.1. Designing a MongoDB-Driven Application
- 10.1.2. Implementing MongoDB Features

10.2.Implementation and Presentation

- 10.2.1. Building the MongoDB Project
- 10.2.2. Final Project Presentation