

Introduction to Mongo

Course Summary

Description

This course provides students with the intensive and comprehensive experience of installing and using the MongoDB database. The course introduces students to the concepts behind nosql document-oriented databases, their design considerations and how they work in an operational environment. Students go through the process of setting up and configuring MongoDB for use, and then working with both the built-in shell and various APIs to access the database and work with the data as they would in a production environment.

The MongoDB best practices are also examined as well as a number of advanced topics like optimizing queries using indexes and aggregating data with MongoDB functions.

Topics

- Introduction
- Nosql Databases
- Installing and Configuring MongoDB
- Data storage, documents, and types
- Querying and working with data
- Working with operators and collections
- Advanced querying
- CRUD functionality in MongoDB
- MongoDB APIs and Drivers
- High performance MongoDB
- Indexes and Sharding

Audience

This course is intended for application developers who need or want to integrate Mongo in their applications or who need to support existing Mongo installations.

Prerequisites

Before taking this course, students should be familiar with basic relational data base concepts. Experience in a high level programming language is preferred, as is a knowledge of JSON.

Duration

Three days

Introduction to Mongo

- I. High Level Overview**
 - A. Nosql Databases
 - B. What is MongoDB?
 - C. JSON primer
 - D. Document versus Relational DBs
 - E. Architecture of MongoDB
 - F. Data Storage in MongoDB
 - G. Transaction handling
 - H. Mongo
- II. Installation and Administration**
 - A. Installing MongoDB
 - B. Starting and stopping MongoDB servers
 - C. Configuration of MongoDB
 - D. Structure of a MongoDB installation
 - E. Security Considerations
- III. MongoDB Basics**
 - A. Data storage
 - B. Working with data types
 - C. Databases
 - D. Collections
 - E. Documents / Objects
 - F. Document Data Types
- IV. MongoDB CRUD**
 - A. Using the shell
 - B. Inserting documents
 - C. Basic querying
 - D. Advanced queries techniques (eg. regex)
 - E. Updating documents
 - F. Removing documents
 - G. Collections and Queries
 - H. Basic Operators
 - I. Handling errors
- V. Aggregation Framework /Advanced Queries**
 - A. Aggregating results
 - B. Aggregation pipeline
 - C. Functions
 - D. Aggregation operators
 - E. Aggregation and grouping
 - F. Limit and skip
 - G. Map reduce
- VI. Using APIs**
 - A. Language bindings for MongoDB
 - B. MongoDB and AngularJS
 - C. MongoDB and NodeJS
- VII. Best Practices**
 - A. MongoDB best practices
 - B. MongoDB pitfalls to avoid
 - C. Usage and design patterns
 - D. MongoDB idioms
 - E. Performance tricks
- VIII. Performance and scaling**
 - A. All about indexes
 - B. Specialized indexes
 - C. Sharding
 - D. Monitoring And Understanding Performance
 - E. Sharding and performance
 - F. Import / Export and backup strategies