



6. Database Training

6.1 Mongo DB

Prerequisites:

1. SQL

Duration: 30 Lectures

Course Content:

1. Introduction

- 1.1. Intro to MongoDB
- 1.2. Concepts
- 1.3. Scaling
- 1.4. SQL and Complex Transactions
- 1.5. Documents Overview
- 1.6. Installing MongoDB (windows)
- 1.7. Installing MongoDB (Linux)
- 1.8. JSON
- 1.9. Dynamic Schema
- 1.10. Mongo import
- 1.11. Cursors Introduction
- 1.12. Query Language: Basic Concepts
- 1.13. Query Language: Projection
- 1.14. Query Language: Advantages of a Dynamic Schema
- 1.15. Shell: Queries
- 1.16. Sorting
- 1.17. Query Language: Cursors

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2. CRUD, ADMIN COMMANDS

- 2.1. Insertion
- 2.2. Update
- 2.3. save() Command
- 2.4. Partial Updates & Document Limits
- 2.5. Removing Documents
- 2.6. Multi Update
- 2.7. Upsert
- 2.8. Wire Protocol
- 2.9. Bulk() Operations and Methods
- 2.10. Common Commands
- 2.11. db.runCommand()
- 2.12. db.isMaster()
- 2.13. db.serverStatus()
- 2.14. db.currentOp() & db.killOp()
- 2.15. collection.stats() & collection.drop()
- 2.16. Review of Commands

3. Storage Engine

- 3.1. Introduction
- 3.2. Storage Engine: WiredTiger
- 3.3. createIndex(), getIndexes() & dropIndex()
- 3.4. Collection Scans
- 3.5. Index Notes
- 3.6. Unique Indexes
- 3.7. Sparse Indexes
- 3.8. TTL Indexes
- 3.9. Geospatial Indexes
- 3.10. Text Indexes
- 3.11. Background Index Creation
- 3.12. Explain Plans
- 3.13. Covered Queries
- 3.14. Read & Write Recap
- 3.15. currentOp() & killOp()



- 3.16. The Profiler
- 3.17. mongostat and mongotop

4. Replication Overview

- 4.1. Asynchronous Replication
- 4.2. Statement-based vs. Binary Replication
- 4.3. Replication Concepts
- 4.4. Automatic Failover
- 4.5. Recovery
- 4.6. Starting Replica Sets
- 4.7. Initiating a Replica
- 4.8. Replica Set Status
- 4.9. Replica Set Commands
- 4.10. Reading & Writing
- 4.11. Failover
- 4.12. Read Preference
- 4.13. Read Preference Options

5. Reconfiguring a Replica Set

- 5.1. Arbiters
- 5.2. Priority Options
- 5.3. Hidden Option & Slave Delay
- 5.4. Voting Options
- 5.5. Applied Reconfiguration
- 5.6. Write Concern Principles
- 5.7. Examining the 'w' Parameter
- 5.8. Write Concern Use Cases & Patterns
- 5.9. Reexamining the Page View Counter Pattern
- 5.10. wtimeout & Capacity Planning
- 5.11. Replica Sets in a Single Datacenter
- 5.12. Replica Sets in Multiple Datacenters
- 5.13. Replica Sets and Storage Engine Considerations



6. Scalability

- 6.1. Sharding & Data Distribution
- 6.2. Replication with Sharding
- 6.3. Chunks & Operations
- 6.4. Sharding Processes
- 6.5. Cluster Topology
- 6.6. Running on local host
- 6.7. The Config Database
- 6.8. Adding the Initial Shards
- 6.9. Enable Sharding for a Collection
- 6.10. Working with a Sharded Cluster
- 6.11. Cardinality & Monotonic Shard Keys
- 6.12. Shard Key Selection Example
- 6.13. Process and Machine Layout
- 6.14. Bulk Inserts and Pre-splitting

7. Backup and Restore

- 7.1. Overview of Security
- 7.2. Security continued: Authentication and Authorization
- 7.3. SSL and Key files
- 7.4. Security and Clients
- 7.5. Intra-cluster Security
- 7.6. Overview of Backing Up
- 7.7. Mongodump
- 7.8. File system Snap shooting
- 7.9. Backing Up a Sharded Cluster
- 7.10. Backup Strategies
- 7.11. Additional Features of MongoDB
- 7.12. GridFS



8. Overview (Tools,CloudManager,Bash Scripting)

8.1. Tools -RoboMongo

8.2. Cloud Manager (Configuring and Working with MMS, Automation)

8.3. Bash Scripting (Basics)



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