MongoDB Developer and Administrator Certification Course

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Syllabus

Lesson 1: NoSQL Database Introduction

☐ What is NoSQL?

☐ Why NoSQL?

☐ Difference Between RDBMS and NoSQL

Databases

☐ Benefits of NoSQL

☐ Types of NoSQL

☐ Key-Value Database

☐ Document Database

☐ Column-Based Database

☐ Graph Database

☐ CAP Theorem

☐ Mongo DB as Per CAP

Lesson 2: MongoDB - A Database for the

Modern Web

☐ What is MongoDB?

☐ JSON

☐ BSON

☐ MongoDB Structure

☐ Document Store Example

☐ MongoDB as a Document Database

☐ Transaction Management in MogoDB

☐ Easy Scaling

☐ Scaling Up vs. Scaling Out

☐ Vertical Scaling and Horizontal Scaling

☐ Features of MongoDB

☐ Secondary Indexes

☐ Replication

☐ Memory Management

☐ Replica Set

☐ Auto Sharding

☐ Aggregation and MapReduce

☐ Collection and Database

☐ Schema Design and Modeling

☐ Reference Data Model

☐ Embedded Data Model

☐ Data Types

☐ Core Servers of MongoDB

☐ MongoDB's Tools

☐ MongoDB Installation

☐ Use Cases

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Lesson 3: CRUD Operations in MongoDB

☐ Data Modification in MongoDB

☐ Batch Insert in MongoDB

☐ Ordered Bulk Insert and Unordered Bulk Insert

☐ Inserts: Internals and Implications

☐ Retrieving the documents

☐ Specify Equality Condition

☐ $in, "AND" Conditions

☐ $or Operator

☐ Specify AND/OR Conditions

☐ Regular Expression

☐ Array Exact Match

☐ Array Projection Operators

☐ $Where Query

☐ Cursor

☐ Pagination

☐ Advance query option

☐ Update Operation

☐ $SET

☐ $Unset and $inc Modifiers

☐ $Push and $addToSet

☐ Positional Array Modifications

☐ Upsert

☐ Removing Documents

Lesson 4: Indexing and Aggregation

☐ Introduction to Indexing

☐ Types and Properties of Index

☐ Sort Order

☐ Text Indexes

☐ Text Search

☐ Index Creation

☐ Index Creation on Replica Set

☐ Remove, Modify, and Rebuild Indexes

☐ Listing Indexes

☐ Measure Index Use

☐ Control Index Use

☐ Index Use Reporting

☐ Geospatial Indexes

☐ MongoDB's Geospatial Query Operators

☐ $GeoWith Operator

☐ Proximity Queries in MongoDB

☐ Aggregation

☐ Pipeline Operators and Indexes

☐ Aggregate Pipeline Stages

☐ MapReduce

☐ Aggregation Operations

Syllabus

Lesson 5: Replication and Sharding

☐ Introduction to Replication

☐ Master-Slave Replication

☐ Replica Set in MongoDB

☐ Automatic Failover

☐ Replica Set Members

☐ Write Concern

☐ Write Concern Levels

☐ Write Concern for a Replica Set

☐ Modify Default Write Concern

☐ Read Preference

☐ Read Preference Modes

☐ Blocking for Replication

☐ Tag Set

☐ Configure Tag Sets for Replica set

☐ Replica Set Deployment Strategies

☐ Replica Set Deployment Patterns

☐ Oplog File

☐ Replication State and Local Database

☐ Replication Administration

☐ Sharding

☐ When to Use Sharding?

☐ What is a Shard?

☐ Choosing a Shard Key

☐ Range-Based Shard Key

☐ Hash-Based Sharding

☐ Impact of Shard Keys on Cluster Operation

☐ Production Cluster Architecture

☐ Config Server Availability

☐ Production Cluster Deployment

☐ Add Shards to a Cluster

☐ Enable Sharding for Database and a

Collection

☐ Maintaining a Balanced Data Distribution

☐ Splitting

☐ Chunk Size and Type

☐ Shard Balancing

☐ Customized Data Distribution with Tag Aware Sharding

☐ Tag Aware Sharding

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Lesson 6: Developing Java and Node JS Application with MongoDB

☐ Capped Collection

☐ TTL Collection Features

☐ GridFS

☐ MongoDB Drivers and Client Libraries

☐ Develop Java Application with MongoDB

☐ Connecting to MonogDB from Java Program

☐ Create Collection From Java Program

☐ Insert Documents From Java Program

☐ Retrieve Documents Using Java Code

☐ Update Documents Using Java Code

☐ Delete Documents Using Java Code

☐ Store Images Using GridFS API

☐ Retrieve Images Using GridFS API

☐ Remove Image Using GridFS API

☐ Connection Creation Using Node JS

☐ Insert Operations Using Node JS

☐ Update Operations Using Node JS

☐ Retrieve Documents Using Node JS

☐ Using DB Cursor to Retrieve Documents

☐ Mongoose ODM Module in Node JS

☐ Defining Schema Using Mongoose

Lesson 7: Administration of MongoDB Cluster Operations

☐ Capped Collection

☐ TTL Collection Features

☐ GridFS

☐ Memory-Mapped Files

☐ Journaling Mechanics

☐ Storage Engines

☐ Power of 2-Sized Allocations

☐ No Padding Allocation Strategy

☐ Diagnosing Performance Issues

☐ Optimization Strategies for MongoDB

☐ Configure Tag Sets for Replica Set

☐ Optimize Query Performance

☐ Monitoring Strategies for MongoDB

☐ MongoDB Utilities

☐ MongoDB Commands

☐ MongoDB Management Service (MMS)

☐ Data Backup Strategies in MongoDB

☐ Copying Underlying Data Files

☐ Backup with MongoDump

☐ Fsync and Lock

☐ MongoDB Ops Manager Backup Software

☐ Security Strategies in MongoDB

☐ Authentication Implementation in MongoDB

☐ Authentication in a Replica set

☐ Authentication on Sharded Clusters

☐ Authorization

☐ End-to-End Auditing for Compliance

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