

Course Content : 5 Days

1. Overview - SQL/NoSQL Datastore design considerations Relational v/s NoSQL stores Entities, Relationships and Database modeling When to use Relational/NoSQL? Categories of NoSQL stores Examples of NoSQL stores	2. Data Formats What are Data Formats? Difference between Data Formats and Data Structures Serializing and de-serializing data The JSON Data Format BSON Data Format Advantages of BSON
3. MongoDB Concepts Servers Connections Databases Collections Documents CRUD Indexes	4. Querying MongoDB Query Expression Objects Query Options Cursors Mongo Query Language Dot Notation Full Text Search
5. MongoDB CRUD Insert (C) Simple Query Examples (R) Update (U) Remove (D)	6. Advanced querying Joins Server-side v/s Client-side querying Retrieving a subset of fields Conditional operators Aggregation Grouping Projections Cursor Methods MapReduce introduction
7. MongoDB Setup & Configuration Installation Basic configuration options	8. Sharding Introduction to Sharding Autosharding in MongoDB

<p>Replication</p> <p>Master-Slave Replication</p> <p>Adding and Removing Sources</p> <p>Replica Sets</p> <p>Nodes in a Replica Set</p> <p>Using Slaves for Data Processing</p> <p>How It Works</p> <p>The Oplog</p> <p>Syncing</p> <p>Replication State and the Local Database</p> <p>Blocking for Replication</p> <p>Administration</p> <p>Diagnostics</p> <p>Changing the Oplog Size</p> <p>Replication with Authentication</p>	<p>When to Shard</p> <p>The Key to Sharding: Shard Keys</p> <p>Sharding an Existing Collection</p> <p>Incrementing Shard Keys Versus Random Shard Keys</p> <p>How Shard Keys Affect Operations</p> <p>Setting Up Sharding</p> <p>Starting the Servers</p> <p>Sharding Data</p> <p>Production Configuration</p> <p>A Robust Config</p> <p>Many mongos</p> <p>A Sturdy Shard</p> <p>Physical Servers</p> <p>Sharding Administration</p> <p>config Collections Sharding Commands</p>
<p>9. Indexing in MongoDB</p> <ul style="list-style-type: none"> • Introduction to Indexes • Creating and querying with indexes • Types and properties of indexes • Covered query indexes • \$ operator with indexes • Indexes in replica set and sharded cluster • Query performance using explain and hint 	<p>8. Administration</p> <ul style="list-style-type: none"> • Starting and Stopping MongoDB • Starting from the Command Line • File-Based Configuration • Stopping MongoDB
<p>11. Monitoring</p> <p>Using the Admin Interface</p> <p>serverStatus</p> <p>mongostat</p> <p>Third-Party Plug-Ins</p>	<p>12. Security and Authentication</p> <p>Authentication Basics</p> <p>How Authentication Works</p> <p>Other Security Considerations</p>
<p>13. Backup and Repair</p>	

Data File Backup

mongodump and mongorestore

fsync and Lock

Slave Backups

Repair

Document-oriented data

Principles of schema design

Designing an e-commerce data model

Nuts and bolts: on databases, collections, and documents