Cassandra Data Modeling

Total Duration: 5 Days

Day 1

Module 1: Introduction to Cassandra

* Introducing Cassandra
* Understanding what cassandra is?
* Learning what cassandra is used for?
* CAP Theorem
* Cluster Architecture
* Eventual Consistency
* Understanding System Requirements
* Understanding our lab

Module 2: Getting Started with Cassandra

* Understanding Cassandra as Distributed DB
* Snitch
* Gossip
* Learning How Data gets distributed
* Replication
* Virtual Nodes

Module 3: Installing Cassandra

* Downloading Cassandra
* Understanding cassandra configuration files
* Cassandra foreground and background mode
* Checking Cassandra Status
* Accessing and understanding Log Structure

Module 4: Communicating with Cassandra

* Using CQLSH
* Creating a Database
* Defining a Keyspace
* Deleting a Keyspace
* Creating a Table
* Defining Columns and Datatypes
* Defining Primary Key
* Recognizing a Partition Key
* Specifying a descending cluster order
* Understanding ways to write data
* Using INSERT INTO command
* Using COPY command
* Understanding how data is stored in Cassandra
* Understanding How data is stored in Disk

Day 2

Module 5: Understanding Data Modelling in Cassandra

* Understanding Data model
* Understanding where clause criteria in Cassandra
* Loading Bulk Data
* JSON format Import and Export
* Using Primary Index
* Creating a Secondary Index
* Defining a Composite Partition Key
* Restrictions On Clustering Keys
* Secondary Indexes
* Restrictions On Secondary Indexes
* Allowing Filtering

Day 3

Module 6: Cassandra Multinode Cluster Setup

* Understanding Hardware Choices for production
* Understanding RAM and CPU Recommendations
* Things to be considered while Selecting storage
* Things to be considered while Deploying in Cloud
* Understanding Cassandra Nodes
* Network Connection Setup
* Specifying Seed Nodes
* Bootstrapping a node
* Cleaning up a node
* Using cassandra-stress for stress testing cluster

Module 7: Cassandra Monitoring and Maintenance --- PART 1

* Understanding Cassandra Monitoring Tools
* Using Nodetool
* Using Jconsole
* Learning about OpsCenter
* Understanding Repair
* Repairing Nodes
* Understanding Consistency
* Understanding Hinted Handoff
* Understanding Read Repair
* Tunable Consistency
* Write Consistency Levels
* Read Consistency Levels
* Replication Factors
* Quorum Value

Day 4

Module 8: Cassandra Monitoring and Maintenance --- PART 2

* Removing a node
* Putting a node back to service
* Decommissioning a node
* Removing a dead node
* Redefining Multiple Data centers
* Changing Snitch Types
* Modifying cassandra-rackdc.properties
* Changing Replication Strategy

Day 5

Module 9: Understanding Backup, Restore and Performance Tuning

* Understanding Backup & Restore Concepts in Cassandra
* Taking a Snapshot
* Incremental Backup
* Using Commit Log Feature
* Using Restore Methods
* Storage Strategies and OS tuning
* JVM Tuning
* Caching Strategies
* Compaction and Compression
* Stress Testing Strategies
* The SSTable And Its Components
* Row Cache and Key Cache
* Anatomy Of Write Request
* Anatomy Of Read Request
* Using Nodetool for backup
* Backing up a keyspace
* Restore operation
* Sstable loader
* Restoring a keyspace