**DURATION: 03 DAYS (24 HOURS)**

**COURSE OBJECTIVE:**

* Learn concepts about NoSQL
* MongoDB Introduction & Use Cases
* Environment Setup & MongoDB Architecture
* MongoDB Database Development & Administration
* MongoDB Database Design & Data Modeling
* Indexing & Aggregation Framework
* Storage and Capacity Planning
* Clustering (Replication & Sharding)
* MongoDB Integrations, Drivers, Java and Node JS Application on MongoDB
* MongoDB Security

**COURSE OUTLINE**

**Lesson 1:** NoSQL Database Introduction

* Top Level Database Categories
* What is NoSQL Database
* Why NoSQL?
* Brief History of NoSQL
* Type of NoSQL Databases
* NoSQL Database Landscape
* NoSQL Databases in terms of BigData
* What is BigData
* Technologies to handle BigData
* Difference between RDBMS and NoSQL
* ACID Properties
* CAP Theorem
* BASE Properties
* Scalability (Vertical and Horizontal)
* Rigid or Fixed vs Dynamic or Schema Less
* Open Source vs Mixed Model

**Lesson 2:** MongoDB - Database for BigData and New Generation Application

* What is MongoDB?
* Use cases of MongoDB
* Companies who are using MongoDB?
* Internal and External architecture of MongoDB
* MongoDB Package Components
* Technique to remember all Tools
* Key value pairs, Object, Array
* JSON and BSON Object
* MongoDB Platform Compatibility Matrix
* MongoDB Environment setup
* Run MongoDB as binaries on windows
* Run MongoDB as binaries on linux
* Install MongoDB on windows as a service
* Install MongoDB on Linux
* Install MongoDB on any other supported OS
* MongoDB Help Methods
* Data Types in MongoDB

**Lesson 3:** Basic CRUD Operations in MongoDB

* Database Operations
* What is CRUD operations
* Insert, select, update and Delete
* Bulk write operations
* SQL to MongoDB mapping chart
* Read Isolations
* Write Concern/acknowledgement
* MongoDB CRUD Concepts

**Lesson 4:** Indexing and Aggregation Framework

* What is an Index?
* When to create an Index?
* When to not?
* Type of Indexes
* Property of Indexes
* Index Management
* What is an aggregation
* When to perform aggregation?
* When to not?
* Type of aggregation mechanism

**Lesson5:** Database Administration

* Database Administration
* Backup Strategy
* Techniques to take Backup
* Backup Through Copying Underlying Files
* Backup Through mongodump
* Database Recovery
* Recovery through mongorestore
* Database Health Check (Monitoring)
* Import and Export of Data to and From MongoDB
* Log monitoring
* Performance Optimization
* Storage Engine and Capacity Planning
* MMAPV1 Engine
* WiredTiger Engine
* In-Memory Engine
* Capacity Planning for Production Cluster
* Database Health check/ Monitoring
* What to monitor?
* How to monitor?
* Tools to monitor Databases
* Database Health check/ Monitoring
* What to monitor?
* How to monitor?
* Tools to monitor Databases
* Database Profiler

**Lesson6:** High Availability & Horizontal Scalability

* Replication (High Availability)
* Type of Replication
* ReplicaSet Members
* Setup Replicated Cluster
* Replicate Database and Collection
* Replication Administration
* Read and write on ReplicaSet Cluster
* Sharding (Horizontal Scalability)
* Sharded Cluster
* Shard Keys
* Sharding Strategy
* Chunks
* Advantages of Sharding
* Considerations Before Sharding
* Setup Sharded Cluster
* Setup Sharded Cluster
* Sharded and Non-Sharded Collections
* Connecting to a Sharded Cluster
* Zones in Sharded Clusters
* Collations in Sharding

***Lesson 7:***

* *Basics of Cloud*
* *Introduction to AWS*
* *Services in AWS*
* *Bounce New Server in AWS*
* *Introduction to Ops Manager*
* *Installation of AWS*
* *Monitoring and Automation through Ops Manager*

**Lesson 8:** MongoDB Security and Auditing

* MongoDB Security
* Checklist
* Authentication
* Authorization
* Role Based Access Control
* Encryption
* Auditing