Prerequisites for learning Neo4j and Graph Databases

- Participants must have a basic knowledge of databases
- Basic understanding of RDBMS and/or NoSQL

Duration

- 3 days

Day 1

- Introduction to Neo4j (Conceptual)
- Introduction to Graph Database (Conceptual)
- What is a database?
- What is a graph?
- Neo4j - Building Blocks (Conceptual)
- Graph Database
- Data Modeling with Graphs
    - Node
    - Label
    - Property
    - Relationship
- Overview of Neo4j Administration
    - Common application architectures that use Neo4j
    - Editions of Neo4j
    - Download Neo4j
    - Deployment options
    - Administrative tasks
- Neo4J Architecture (Conceptual)
- Connecting to Neo4j (Practical)
- From the command line using the Neo4j shell
- The Cypher Query Language (Practical)
    - Introduction
    - Creating your first node and relationship using Cypher
    - Querying nodes and relationships using Cypher
    - Deleting data from Neo4j using the Cypher query
    - Limiting and skipping results with Cypher
- Installation & Configuration (Practical)

- Neo4j Desktop — About Neo4j Desktop
- Installation on Linux
- Configuration
    - An introduction to the primary configuration file in Neo4j.
    - File locations
    - Ports
    - Set initial password
    - Password and user recovery
    - Transaction logs

Day 2

- Managing a Neo4j Database (Practical)
  - Start a Neo4j instance.
  - Stop the Neo4j instance.
  - Set the password for the neo4j user.
  - Copy a Neo4j database.
  - Check the consistency of a Neo4j database.
  - Perform backup of a Neo4j database.
  - Restore a Neo4j database.
  - Create a database with the import tool.
- Managing Multiple Databases in Neo4j (Practical)
  - Reviewing the initial databases
  - Creating a new database
  - Loading data and working with Movie database
  - Cleaning out database within same instance
- Casual Clustering in Neo4j (Practical)
  - Describe why you would use clusters.
  - Describe the components of a cluster.
  - Deploy a cluster
  - Configure and use a cluster.
  - Seed a cluster with data.
  - Monitor and manage core servers in the cluster.
  - Monitor and manage read replica servers in the cluster.

Dive into Neo4j Graph Algorithms Library

- Real-World Examples of Graph Algorithms Applications
- Graph Properties
- Library Installation

Day 3

1) The Raft Consensus Algorithm (Conceptual)
    a) What is Raft?
    b) Wat is consensus?
    c) Leader election
    d) Log Replication
    e) Safety
    f) Cluster membership
    g) Replicated State Machines
    h) Fault tolerance in Raft

2) Causal Clustering lifecycle (Conceptual)
    a) Introduction
    b) Discovery protocol
    c) Core membership
    d) Read Replica membership
    e) Transacting via the Raft protocol
    f) Catchup protocol
    g) Read Replica shutdown
    h) Core shutdown

3) Security in Neo4j (Conceptual)
    a) Describe what security means for an application.
    b) Describe how to secure data-in-transit.
    c) Describe how to secure data-at-rest.
    d) Configure and use security auditing.

4) Monitoring Neo4j (Practical)
    a) Describe the categories of monitoring and measurement you can perform with Neo4j.
    b) Monitor:

i) queries

ii) transactions

iii) connections

iv) memory usage

c) Manage log files.

5) Neo4j Performance Tuning (Conceptual + Practical)

a) Memory configuration

b) Index configuration

c) Statistics and execution plans

6) Neo4j upgrade and migration

a) Migrating databases

b) Upgrade checklist

c) Upgrade a instance

d) Post-upgrade tasks