

## Apache Cassandra

### NoSQL Overview

- Justifying non-relational data stores
- Listing the categories of NoSQL Data Stores

### Exploring Cassandra

- Defining column family data stores
- Surveying Cassandra
- Dissecting the basic Cassandra architecture

### Querying Cassandra

- Defining Cassandra Query Language, CQL
- Enumerating CQL data types
- Manipulating data from the cqlsh interface

### Leveraging Cassandra structures and types

- Drawing comparisons with the relational model
- Organizing data with keyspaces, tables and columns
- Creating collections and counters

### Modeling data based on queries

- Designing tables around access patterns
- Clustering with compound primary keys
- Improving data distribution with composite partition Keys

### Configuring Data Consistency

Detailing tunable consistency

- Identifying consistency levels
- Selecting appropriate read and write consistency levels
- Distinguishing consistency repair features

## **Balancing consistency and performance**

- Relating replication factor and consistency
- Trading consistency for availability
- Achieving linearizable consistency with Compare-And-Set

## **Working with Cassandra collection types**

- Grouping elements in sets
- Ordering elements in lists
- Expressing relationships with maps
- Nesting collections

## **Storing data for easy retrieval**

- Mapping data to tuples and user defined types
- Investigating the frozen keyword
- Applying the Valueless Columns Pattern
- Strategic implementation of clustering columns

## **Controlling data life span**

- Expiring temporal data with time-to-live
- Reviewing how tombstones achieve distributed deletes
- Executing DELETES and UPDATES in the future

## **Constructing materialized views and time series**

- Modeling time series data
- Enhancing queries with materialized views
- Materialized views maintained in the application
- Driving analytics from materialized views

## **Managing triggers**

- Creating triggers by implementing ITrigger
- Attaching triggers to tables
- Supporting materialized views with triggers

## **Accessing Cassandra Programmatically**

### **Querying Cassandra data with the Datastax Java Driver**

- Connecting to a Cassandra cluster
- Running CQL through the Java Driver
- Batching prepared statements
- Paginating large queries

### **Persisting Java Objects with Kundera**

- Defining the Java Persistence Architecture, JPA
- Configuring Kundera to work with Cassandra
- Generating schemas automatically
- Managing JPA transactions in Kundera