Oracle NoSQL Database for Developers

Oracle Database

DURATION	MODULES	COURSE CODE
2 Days	**15 Lectures**	**—**

Course Overview

This course helps you learn to design a data model for Oracle NoSQL Database. You learn to use Oracle NoSQL Database APIs in an application to create, retrieve, and update data in a KVStore. Next, you learn to use Oracle NoSQL Database advanced features, including support for JSON data and SQL for Oracle NoSQL Database. Finally, you create consistency and durability policies according to application requirements and access a secure store. The instructions are reinforced with hands-on practices.

What You Will Learn

Course Introduction

- Objectives
- Course Goals
- Course Outline
- Course Environment
- Accessing the labs Directory
- Meet Doris
- Additional Resources
- Summary
- Unit I Designing Application Schema
- Course Outline Unit I-2
- Doris Designs the Applications Unit I-3

Big Data and NoSQL: Overview

- Objectives
- Doris Prepares for Meeting with Team
- What Is Big Data?
- Characteristics of Big Data
- Big Data Opportunities and Challenges: Integrating Data Types
- Big Data Categories: Unstructured, Semi-structured, and Structured
- What Is a NoSQL Database?

- What Is Oracle NoSQL Database?
- What Is HDFS?
- Comparing HDFS/Oracle NoSQL Database/Oracle Database
- When to Use Oracle NoSQL Database: Scale, Velocity, and Latency
- When to Use Oracle NoSQL Database: Volume and Uptime
- When to Use Oracle NoSQL Database: Data Variety
- Oracle NoSQL Database Use Cases
- Usage Scenario 1: Retail Marketing System
- Usage Scenario 2: Human Resources System
- Usage Scenario 3: Healthcare System
- A Semi-structured Big Data Format Example
- Summary
- Practice 2 Overview: Big Data and NoSQL

Getting Started with Oracle NoSQL Database

- Objectives
- Doris Explores Oracle NoSQL Database
- Oracle NoSQL Database: Usage Components
- How Oracle NoSQL Database Works
- Architecture
- KVStore Components
- Request Processing: Example
- Performance and Throughput
- Accessing the KVStore
- Introducing KVLite
- Starting KVLite
- Verifying That a KVStore Is Running
- Restarting or Rerunning KVLite
- Summary
- Practice 3 Overview: Using KVLite

Schema Design

- Objectives
- Doris Discusses with Team
- Importance of Schema Design
- Oracle NoSQL Schema Design Options
- Key-Value Data Model
- Table Data Model: Overview
- Designing Parent Tables
- Table Field Data Types
- Keys and Indexes for the Table Data Model
- Parent Table: Examples
- Defining Child Tables
- Creating Child Tables Versus Record Fields
- Schema Design Options: Summary

- Using Keys to Retrieve Data
- RDBMS Versus Table Data Model
- Quiz
- Sample Email Application: Introduction
- Data Modeling for the Email App
- Email App Schema
- Design Considerations
- Summary
- Practice 4 Overview: Designing Data Model

Application-Specific Requirements

- Objectives
- Doris Finalizes the Application Design
- Write and Read Process
- Consistency Policy: Definition
- Applying Consistency
- Default Consistency
- Types of Consistency Policies
- Predefined Consistency Policies
- Time-Based Consistency Policy
- Version-Based Consistency Policy
- Consistency Policies: Summary
- Quiz
- Write Process
- Durability: Definition
- Applying Durability
- Durability Policy
- Synchronization Policy
- Acknowledgment Policy
- Default Durability
- Durability Polices: Summary
- Quiz
- Summary
- Practice 5 Overview: Application-Specific Requirements
- Unit II Creating, Retrieving, and Updating Data
- Course Outline Unit II-2
- Doris Starts Coding Unit II-3
- KVStore Handle Unit II-4
- Creating a KVStore Handle Unit II-5
- Using the KVStoreConfig Class Unit II-6
- KVStoreConfig Class Definition Unit II-7
- Using the KVStoreFactory Class Unit II-8
- Creating a KVStore Handle: Example Unit II-9
- Quiz Unit II-10

Working with Tables

- Objectives
- Doris Creates Application Tables
- Creating Tables: Overview
- Data Definition Language Commands
- CREATE TABLE: Syntax
- CREATE TABLE: Simple Example
- Creating a Table from a Java Application
- TableAPI: Introduction
- Methods for Executing a DDL Command
- Executing a DDL Command: Example
- Quiz
- Creating a Table by Using CLI
- Accessing the CLI
- Executing a DDL Command
- Viewing Table Descriptions
- Recommendation: Using Scripts
- Modifying a Table
- Deleting a Table
- Quiz
- Indexes: Introduction
- Creating Indexes
- Removing Indexes
- Summary
- Practice 6 Overview: Working with Tables

Writing and Deleting Data Using TableAPI

- Objectives
- Doris Populates Tables with Data
- TableAPI
- TableAPI Methods for Write Operations
- Writing Rows to Tables
- Constructing Handles
- Creating a Row Object, Adding Fields, and Writing a Record
- Write Method Definitions
- Creating the Row Object
- Using the Row Object
- putIfAbsent(): Use Case
- putIfPresent(): Use Case
- Quiz
- Writing Rows to Child Tables
- Writing Rows to Child Tables: Example
- Bulk Put Operations
- Doris Deletes Table Data

- TableAPIs for Delete Operations
- Deleting Rows from a Table
- Delete Method Definitions
- Understanding Time to Live (TTL)
- Scenario
- Versions
- Scenario
- Summary
- Practice 7 Overview: Writing Data Using TableAPI

Retrieving Data Using TableAPI

- Objectives
- Doris Reads Table Data
- Reading Data from a Table: Methods
- Retrieving Table Data
- Retrieving a Single Row
- Retrieving Multiple Rows
- Retrieving Child Tables
- Iterating a Table
- Using MultiRowOptions
- Specifying Ranges
- Retrieving Nested Tables
- Reading Indexes
- Parallel Scans
- Bulk Get Operations
- Quiz
- Versions
- Summary
- Practice 8 Overview: Reading Data from Tables Using TableAPI

Working with JSON Data

- Objectives
- What Is JSON Format?
- Benefits of JSON
- JSON Format: Nested Example
- How Does Oracle NoSQL Incorporate JSON Data?
- Doris Creates a Table, Loads JSON Data, and Creates an Index
- Preparing to Use JSON Data
- Creating the Table
- Loading the JSON Data
- Creating Indexes
- Doris Queries JSON Data from an Oracle NoSQL Table
- Simple Query Examples
- Summary
- Practice 9 Overview: Working with JSON Data

Using SQL for Oracle NoSQL Database

- Objectives
- Doris Investigates SQL for Oracle NoSQL Database
- Starting the SQL for Oracle NoSQL Database Shell
- Doris Works with Simple Data
- Previewing a Simple Data Set
- Creating a Table and Loading Data
- Creating a Query Against Simple Data
- Additional Simple Data Query Examples
- Doris Works with Complex Data
- Working with Complex Data
- Creating a Table and Loading Data
- Querying Complex Data: Using Timestamps
- Querying Complex Data: Arrays
- Querying Complex Data: Records
- Querying Complex Data: Maps
- Summary
- Practice 10 Overview: Using SQL for Oracle NoSQL
- Unit III Implementing Application-Specific Requirements
- Course Outline Unit III-2
- Doris Configures Application Requirements Unit III-3

Configuring Consistency Policies

- Objectives
- Consistency Policy: Review
- Viewing the Default Consistency Policy
- Creating Consistency Policies: Overview
- Using a Predefined Consistency Policy
- Creating a Time-Based Consistency Policy
- Consistency.Time: Example
- Creating a Version-Based Consistency Policy
- Consistency.Version: Example
- Changing a Default Consistency Policy
- Summary
- Practice 11 Overview: Viewing Consistency Policies

Configuring Durability

- Objectives
- Durability: Review
- Viewing the Default Durability Policy
- Creating Durability Policies: Overview
- Setting a Synchronization-Based Durability Policy
- Setting an Acknowledgment-Based Durability Policy
- Creating a New Durability Policy

- Changing the Default Durability Policy
- Summary
- Practice 12 Overview: Setting Durability Policies

Creating Transactions

- Objectives
- What Is a Transactional Operation?
- Creating Transactions: Points to Remember
- Creating and Running Transactional Operations: Process
- Creating and Running Transactional Operations: Example
- TableOperationFactory Methods
- Executing Operation Syntax
- Summary

Handling Large Objects

- Objectives
- Large Objects: Introduction
- Oracle NoSQL APIs for Large Objects
- Large Objects Storage
- Creating Large Object Keys
- Creating a Key for Table API Users
- Quiz
- Storing Large Objects: API Overview
- Storing Large Objects: Code Example
- Retrieving Large Objects: API Overview
- Retrieving Large Objects: Code Sample
- Deleting Large Objects: API Overview
- Deleting Large Objects: Code Example
- Summary
- Practice 14 Overview: Handling Large Objects

Accessing a Secure Store

- Objectives
- Secure KVStore
- Security Features
- Obtaining Handle to Secure Store
- Security Parameters
- Accessing a KVStore: Example
- Specifying Security Properties
- Security Constants
- Summary
- Quiz
- A Handling Exceptions
- Objectives A-2
- Understanding Exceptions A-3