O&B ACADEMY

COURSE SYLLABUS

JAVA-301

Enterprise Java Best Practices and Enterprise Test Automation

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Enterprise Java Best Practices and Enterprise Test Automation

OVERVIEW

Skill Level	:	Advanced
Suitable for	:	Experienced Java developers wanting to learn how to efficiently develop enterprise-level applications
Duration	:	5 Days

Enterprise Java trainees will extend a simple Spring Boot application to learn and apply enterprise development best practices, inclusive of test automation, performance, and maintainability.

PREREQUISITES

- Experience with HTML, SQL, JUnit, Spring or Java EE, JPA

LEARNING OUTCOMES

- Gain expertise in developing scalable enterprise applications using Java EE technologies.
- Learn advanced concepts such as JPA for data persistence and EJB for component-based architecture.
- Explore techniques for building secure, transactional, and high-performance Java applications for enterprise environments.

COURSE OUTLINE

Domain Driven Design

- Ubiquitous Language
- Layered vs. Hexagonal Architecture
- Domain Classes
- Entities
- Value Objects
- Services
- Service Anti-Patterns
- DDD Package Structure
- Aggregates
- Bounded Context
- Event Storming

Mock Testing

- TDD using Mockito

Integration Testing

- TDD using Spring MockMvc
- Testcontainers
- Separating unit tests from integration tests

POST-GET-Redirect (PRG) Pattern

- Common Conventions

Transactions and Concurrency

- Testing for race conditions and avoiding them

Database Optimization

- Profiling & Replication
- Indexing best practices
- Optimizing Queries
- Optimizing Schemas
- Avoiding Deadlocks
- Optimization with the Application
- Archiving & Partitioning
- Reclaming Storage & Gathering Statistics

Database Migration

- Using Liquibase to manage changes to the database

Load Testing with JMeter

- Performance testing overview
- HTTP Protocol overview
- Simulating requests
- Simulating concurrent users

- Managing cookies
- Generating reports
- Interpreting results
- Record & playback
- Using variables & functions
- Scaling-up test using master-slave configuration
- Tips & best practices

Command Query Responsibility Separation (CQRS)

- Using different models to handle different requests and responses

Software and Hardware Requirements

- Java
- Maven
- STS or Eclipse

Introduction to MongoDB (NoSQL)

- Overview - history, advantages & disadvantages
- Using the mongo console
- Connecting to a database
- Querying
- Filters
- Embedded documents in filters
- Comparison Operators
- Pagination
- Aggregation Framework
- Creating a Database
- Creating Collections
- Inserting Documents
- Updating
- Replacing
- Deleting
- Analyzing performance of queries
- Indexing
- Unique constraint
- Document validation
- Java library for MongoDB

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Enquiries

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