

Spring Boot Enterprise Development with Microservices, MongoDB, and RabbitMQ

Duration: 10 days (4hours / per day)

Prerequisite: Knowledge of Java Programming

Day 1 – Spring Fundamentals

- Introduction to Spring
 - Spring Modules
 - Spring Core
 - Introduction to IOC
 - Types of DI
 - Setter vs Constructor Injection
 - Collection DI
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Day 2 – Spring Core (Bean Management)

- Bean Inheritance
 - Inner Beans
 - Bean Scopes
 - Bean Auto-wiring
 - Static Factory Method
 - Instance Factory Method
 - Bean Lifecycle
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Day 3 – Spring AOP & MVC Basics

- Spring AOP
 - AOP Concepts
 - Programmatic vs Declarative AOP
 - Programmatic AOP
 - Types of Advices
 - Types of Pointcuts
 - Spring MVC
 - Introduction to Spring MVC
 - Handler Mapping
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Day 4 – Spring MVC & Spring Boot Basics

- Spring MVC
 - Controllers
 - Validations
 - Views
 - Form Tags

- Introduction to Spring Boot
 - What is Spring Boot & What It Does
 - Spring Boot Hello World
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Day 5 – Spring Boot Configuration & Setup

- Installing STS / IDE Setup
 - Maven Basics
 - Spring Beans & DI in Spring Boot
 - Spring Boot Configuration
 - Configuration Properties
 - Application Properties & YAML
 - Spring Boot Annotations
 - @SpringBootApplication
 - Auto-Configuration
 - Embedded Server
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Day 6 – RESTful Web Services & Data Access

- RESTful Web Services
 - REST Overview
 - REST vs SOAP
 - Spring MVC REST Support
 - REST Annotations
 - URI Templates
 - REST Controllers
 - Accessing Data with Spring Boot
 - Spring Data JDBC
 - DataSource Auto-configuration
 - JPA with Spring Boot
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Day 7 – MongoDB Fundamentals

- MongoDB Overview
 - Features, Positioning, Applications
 - Data Model, Limitations, Use Cases
 - MongoDB Query Language (QL)
 - CRUD Operations
 - find, findOne
 - Insert Operations
 - MongoDB vs Apache CouchDB
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Day 8 – MongoDB Advanced & Spring Data MongoDB

- MongoDB Data Operations
 - Query Interface & Syntax
 - Projections & Operators
 - Sorting & Limiting Data
 - Update & Delete Operations
 - Aggregation & Aggregation Pipeline
 - Spring Data with MongoDB
 - MongoRepository
 - Custom Query Methods
 - Complex Queries
 - JavaBean Document Mapping
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Day 9 – Spring Boot Actuator & Microservices

- Spring Boot Actuator
 - Actuator Setup
 - Health, Info, Metrics, Loggers, Beans, Shutdown
 - Introduction to Microservices
 - Monolithic vs Microservices
 - Why Microservices
 - Microservices Restructuring
 - Creating & Refactoring Services
 - Migrating to PostgreSQL
 - docker-compose.yml
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Day 10 – Messaging, Communication & Testing

- Synchronous Communication
 - RestTemplate
 - DTO Pattern
 - Testing APIs using Postman
- Working with RabbitMQ
 - Message Queues Overview
 - RabbitMQ Setup
 - Publishing & Consuming Messages
 - Updating Company Ratings
- **Overview of Testing in Spring Boot**
 - Types of Tests (Unit, Integration, Slice)
 - Testing Annotations
 - @SpringBootTest
 - @WebMvcTest
 - @DataJpaTest
 - JUnit 5 with Spring Boot
 - Mockito for Mocking
 - Testing REST Controllers
 - Testing Repository & Service Layers

- Running Tests & Generating Reports