Microservices Development with Java and Spring Boot

Course Summary

Objectives

After taking this course, students will be able to:

- Use Spring Boot to build standalone microservices and RESTful services
- Secure the transport layer via HTTPS
- Implement asynchronous messaging
- Discuss Netflix OSS to implement patterns for service discovery, load balancing, fault tolerance, and other key concerns for scalable distributed systems
- Monitor microservices with Sleuth and Zipkin
- Filter requests to your microservices using Zuul
- Students will finally look at implementing microservices with kubernetes

Topics

- Demystifying Microservices
- Building Microservices with Spring Boot
- Microservices Applied
- Microservices Use Case
- Reviewing a Sample Use Case Implementation
- Autoscaling Microservices
- Logging and Monitoring
- Containerizing your Microservice
- Deploying your Microservice with Kubernetes

Duration

Four Days
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Course Outline

I. **Demystifying Microservices**
   A. Microservices Progression and Architecture
   B. Characteristics of microservices
   C. Microservices benefits
   D. Microservices Relationship with SOA & Twelve Factor apps
   E. Microservices Uses

II. **Building Microservices with Spring Boot**
   A. Spring Boot to Build Microservices
      - Lab : Installing Spring Tool Suite, Maven and Java
      - Lab Solution : Install STS and Java - Visual
      - Lab Solution : Maven Installation
   B. POM and HATEOAS
   C. Spring Boot Configuration
   D. Securing Microservices
   E. Enabling cross-origin access for Microservices

III. **Microservices Applied**
   A. Challenges around Microservices
   B. Communication and Orchestration of Microservices
   C. BPM and Workflows with Microservices
   D. Service Design Endpoints
   E. Service Version

IV. **Microservices Use Case**
   A. Understanding the Application
   B. Why Microservices?
   C. Business Case
   D. Key Questions to be Answered
   E. Monolithic to Microservices
   F. Integration with other systems

V. **Reviewing a Sample Use Case Implementation**
   A. Spring Cloud
   B. Config Server
   C. Feign as a declarative REST client
   D. Eureka Discovery
   E. Zuul
   F. Streams for reactive microservices

VI. **Autoscaling Microservices**
    A. Autoscaling Microservices
    B. Components

VII. **Logging and Monitoring**
    A. Logging and Monitoring
    B. Turbine

VIII. **Containerizing your Microservice**
    A. Containerizing your Microservice
    B. Docker

IX. **Deploying your Microservice with Kubernetes**
    A. Deploying your Microservice with Kubernetes

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