

# Building MicroServices using Spring Boot (5 Days)

## Audience

This course will be oriented for developers and other technical individuals that need to create microservices using Spring Boot framework.

## Synopsis

This course is designed to illustrate the architectural building blocks and usage of microservices integrated with the Spring Boot framework. Through a series of lectures and workshops seminar will illustrate use of Spring Boot, use of REST services, microservices architecture, microservice design patterns, Spring Cloud, use of Hibernate/SQL with REST, use of Sleuth, Spring Batch basics, use of Spring MVC role of Spring Cloud, Maven project dependencies, Spring Batch utilization and Spring Security authorizations.

Additionally, this course is constructed in a manner to progress students from introductory concepts to intermediate level industry best practices through practical case studies.

## Prerequisites

Understanding of Java programming language and use of Eclipse IDE is required.

## Objectives

- Understand core concepts of Spring Boot
- Depict role and usage of Spring Batch
- Explore use of Spring Boot with RESTful services
- Integration of Maven with Spring Boot projects
- Illustration of Spring MVC architecture; request mappings, View Resolvers, Interceptors, etc)
- Depict use of Spring using JPA or Hibernate
- Illustration of MicroService environment and architecture
- Depict the Spring Netflix architecture and integration tiers
- Use Netflix Eureka for service discovery (deployment, load balancing, configuration, etc)
- Use of Builder Patters with Spring @Builder and Lombok library
- Depict use of Java Reactive Extensions (Rx) with Observer pattern
- Demonstrate application hardening using Netflix Hystrix
- Integration of Zuul Server as gatekeeper for Edge components
- Use of Spring Cloud Kubernetes (config maps, services, secrets, etc)
- Utilization of Feign for simplifying HTTP clients
- Enhancement of microservice application logs using Spring Cloud Sleuth
- Use of Spring Cloud Security for OAuth2-based SSO and JSON Web Tokens

## Course Outline

### Day 1

- Lecture 1 - Spring Framework and Annotation Configuration
- Lecture 2 - Spring Framework Advanced Configuration
- Lab: Spring Advanced Configuration
- Lecture 3 - Introduction to Spring Boot
- Lab: Spring Boot

### Day 2

- Lecture 4 - Extended Spring Framework, and advanced Spring Boot
- Lab: Spring Advanced Boot
- Lecture 5 – Maven and Spring Boot
- Lab - Use of Maven with Spring
- Lecture 6 - Spring Patterns
- Lab – Builder pattern

### Day 3

- Lecture 7 - Using Spring with JPA or Hibernate
- Lecture 8 - Spring Data JPA
- Lab - Spring Data with Hibernate
- Lecture 9 - Spring REST Services
- Lab - Create a RESTful API with Spring Boot
- Lab - Create a RESTful Client with Spring Boot

### Day 4

- Lecture 10 - Introduction to Microservices
- Lecture 11 - Spring Cloud Configuration
- Demo: Spring Cloud Config
- Lecture 12 - Service Discovery with Netflix Eureka
- Lab - Use Netflix Eureka for Service Discovery
- Lab – Use of Feign as Declarative HTTP Client
- Lecture 13. Load Balancing with Netflix Ribbon
- Lab - Use Netflix Ribbon for Client-Side Load Balancing

## Day 5

- Lecture 14 - Circuit Breakers with Netflix Hystrix
- Lab - Use Netflix Hystrix for the Circuit Breaker Pattern
- Lecture 15 - Edge Components with Netflix Zuul
- Lab - Edge Components with Zuul
- Lecture 16 - Spring Security
- Lab - Enable Basic Security
- Lecture 17 – Spring Cloud Security
- Lab – Secure REST API using OAuth2
- Lecture 18 – Spring Cloud Sleuth
- Lab – Use of Spring Cloud Sleuth for Log Analysis
- Lecture 19 – Spring Batch
- Lab – Spring Batch Workflow Processing