

SPRING BOOT AND SPRING CLOUD

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Day 1

1. SPRING MVC PRIMER

- Integrating Spring with Java EE Web Apps - ContextLoaderListener and WebApplicationContext
- Spring Web MVC Overview, Capabilities, Architecture (Front Controller, MVC Pattern)
- Spring MVC Basics the DispatcherServlet,
- Configuration using @EnableWebMvc
- Controllers, using @Controller, @RequestMapping (Handler Methods)
- Controller Details using @RequestMapping, @RequestParam and @PathVariable
- Model Data, @ModelAttribute, Model/ModelAndView Classes

2. GETTING STARTED WITH SPRING BOOT

- Spring Boot starters, CLI, Gradle plugin
- Application class
- @SpringBootApplication
- Build as a Runnable jar
- Dependency injection, component scans, Configuration
- Externalize your configuration using application.properties or YAML files
- Context Root and Management ports
- Logging

3. BUILDING WEB APPLICATIONS IN SPRING BOOT

- Spring MVC Controllers
- Using ModelAttributes
- @RequestMapping and @RequestParam
- Using a ModelAndView
- Using images and templates for views
- Using an Embedded database with JdbcTemplate
- Executing Sql scripts
- Using a production database
- JPA Data and JPA Repositories

Day 2

4. RESTFUL WEB SERVICES

- REST Overview (Characteristics/Capabilities, URI Templates, REST vs SOAP)
- REST and Spring MVC
- Spring support for REST
- @RequestMapping/@PathVariable, @RequestBody, @ResponseBody, HTTP Method conversion
- URI Templates and @PathVariable
- Writing RESTful Controllers / @RestController
- JSON Representations for Resources
- Message Converters
- Generating XML
- JAXB and Jackson Message Converters for XML
- JAXB / @XmlRootElement
- Content Negotiation
- Client Requirements and Spring's RestTemplate

Day 3

5. SECURING AN APPLICATION WITH SPRING BOOT AND SPRING SECURITY

- Spring Security Overview using the DelegatingFilterChainProxy and FilterChainProxy
- Using Spring Web Authentication
- The key Classes of HttpSecurity, AuthenticationProvider, UserDetailsService, UserDetails, AuthenticationManager, Authentication and GrantedAuthorities
- Using your own AuthenticationProvider and UserDetailsService with hashed passwords and tokens
- Spring Security Authorization overview with the AccessDecisionManager and AccessDecisionVoters
- Authorization using @EnableGlobalMethodSecurity, JSR250 and Spring Security Annotations
- Using a @ControllerAdvice for ExceptionHandling
- Creating your own custom Authorization Voter and AccessControlManager
- Using HTTPS
- Securing a Restful service via a customized UsernamePasswordAuthenticationFilter

6. JMS SERVICES (OPTIONAL)

- ActiveMQ support

- Using JmsTemplate
- MessageListenerAdapter
- SimpleMessageListenerContainer
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Day 4

7. **Micro Services**

8. Introducing Micro Services and its Benefits & Challenges
9. Building a Microservice-Simple application
10. Architecting Microservices
 - Module introduction
 - Components of a Microservice
 - Identifying Microservice Boundaries
 - Hosting Microservices
 - Running Microservices Locally in Containers
 - Service Discovery & Testing Microservices
 - Microservice Communication Patterns (Synchronous & Asynchronous)
 - Resilient Communication Patterns

Day 5

11. Spring Cloud Overview

Spring Cloud and Netflix OSS

Feign as a declarative REST client

Ribbon for load balancing

Setting up the Config Server with Remote Git Repository

Spring Cloud Bus

Eureka for registration and discovery

- Understanding dynamic Service registration and discovery
- Understanding Eureka and Setting up the Eureka Server

Zuul proxy as the API gateway

- Setting up the Zuul

Circuit breaker and monitoring

- Using Hystrix's fall back methods
- Monitoring
- Setting up the Hystrix Dashboard

Event Streaming

- Using RabbitMQ