

## RESTful Services & MICRO SERVICES COURSE CONTENT

### SPRING WEB MVC

- 1) Spring Web MVC Introduction
- 2) Spring Web MVC Advantages
- 3) Spring MVC Architecture
- 4) Introduction to Front Controller
- 5) Controllers
- 6) Handler Mappers
- 7) View Resolvers
- 8) Web Application development using Spring Boot
- 9) Embedded HTTP Servers Introduction
  - a) Embedded Tomcat Server
  - b) Embedded Jetty Server
  - c) Embedded Undertow Server
- 10) Making Jetty as Default server
- 11) Web Application Deployment in External Server
- 12) Sending Data From UI to Controller
  - a) Query Param
  - b) Path Param
- 13) Sending Data From Controller to UI
  - a) Model
  - b) ModelAndView
- 14) @RequestBody annotation
- 15) @ResponseBody annotation
- 16) Form Based application development using Spring Boot
- 17) Thymeleaf Introduction
- 18) Web Application with Thymeleaf
- 19) Sending Email using Spring Boot
- 20) Exception Handling in Spring Boot Web Application
- 21) Spring Boot Actuators
  - a) Health
  - b) Info
  - c) Heapdump
  - d) Theadddump
  - e) Beans
  - f) Httptrace
  - g) Mappings
  - h) Shutdown etc

- 22) Unit Testing for Spring Boot Application using Junit with Mocking

### SPRING REST

- 23) Distributed Applications
- 24) Distributed Technologies
- 25) SOAP vs REST
- 26) RESTful Services Introduction
- 27) REST principles
- 28) One Time operations
- 29) Run Time Operations
  - a) Marshalling
  - b) Un Marshalling
- 30) JAX-B Introduction
- 31) JAX-B Architecture
- 32) Applications development with JAX-B
- 33) JSON Introduction
- 34) XML vs JSON
- 35) JACKSON API
- 36) Converting Java object to JSON and vice versa using Jackson API
- 37) GSON API
- 38) Converting Java Object to JSON and Vice Versa using GSON API
- 39) HTTP Protocol Details
- 40) HTTP Methods
  - a) GET
  - b) POST
  - c) PUT
  - d) DELETE
- 41) HTTP Status Codes
- 42) @RestController
- 43) @RequestBody
- 44) @ResponseBody
- 45) @RequestParam
- 46) @PathVariable
- 47) MediaTypees
- 48) Consumes
- 49) Produces
- 50) Accept Header
- 51) Content-Type header
- 52) REST API Development using Spring Boot



- 53) POSTMAN
- 54) SWAGGER & SWAGGER UI
- 55) Exception Handling in REST API
- 56) REST Security
  - a) HTTP Basic Auth
  - b) JWT
  - c) OAuth2.0
- 57) Mono Objects
- 58) Flux Objects
- 59) REST Client Introduction
- 60) RestTemplate
- 61) WebClient
- 62) RestTemplate vs WebClient
- 63) Reactive Programming
- 64) Synchronous vs Asynchronous Calls
- 65) Apache Kafka with Spring Boot
- 66) Redis Cache Integration with Spring Boot

## MICRO SERVICES

- 67) Monolith Architecture Introduction
- 68) Monolith Architecture case study
- 69) Monolith Application Deployment Process
- 70) Load balancer (Cluster) case study
- 71) Load Balancing Algorithms
  - a) Round Robin
  - b) IP Hashing
  - c) Sticky Session
- 72) Monolith Architecture Drawbacks
- 73) Micro services Introduction
- 74) Micro Services Advantages
- 75) Micro Services Dis-Advantages
- 76) Micro Services case study
- 77) Identifying Micro services boundaries
- 78) Micro services Architecture
- 79) Micro services Development
  - a) API – 1
  - b) API – 2
- 80) Interservice communication case study
- 81) FeignClient
- 82) Cloud Introduction
  - a) AWS
  - b) AZURE
  - c) PCF

- 83) AWS Account Creation
- 84) AWS Services Overview
- 85) Deploying Micro services to AWS
- 86) Auto Scaling
- 87) Service Registry case study (Netflix Eureka)
- 88) API Gateway
- 89) Hystrix (Circuit Breaker)
- 90) Hystrix Dashboard
- 91) Spring Boot Admin Server
- 92) Spring Boot Admin Client
- 93) Distributed Logging
  - a) Sleuth Logging
  - b) Zipkin Server
- 94) Ribbon case study (Micro services load balancer)
- 95) Implementing Ribbon in Micro services
- 96) ConfigServer Introduction & Implementation
- 97) Micro services Integration with Angular

## TOOLS

- 98) Maven
- 99) Log4J
- 100) Junit & Mocking
- 101) Jenkins
- 102) Docker
- 103) SonarQube
- 104) POST MAN

