Spring Boot – Course Outline

1 Duration

- 4 days (32 hours)

2 Objectives

At end of this workshop, participants will able to :

- Get detail understanding of Spring Framework, Spring Boot fundamentals, features and usage
- Understand how to create Spring Boot project, build and deploy to production
- Design and develop web services using Spring Boot and integration with databases
- Debug, troubleshoot and tune the Spring Boot applications

Note: *This course is designed for beginner to intermediate level.*

3 Audience

Developers who are interested to learn and build standalone scalable web apps/APIs with Spring

4 Pre-requisite

- Good knowledge on Java programming
- Knowledge on Spring Framework
- Familiarity on Maven build tool and XML/JSON

5 Hardware & Network Requirements

- Desktop or Laptop with minimum **8 GB RAM**
- Open Internet connection with good speed (minimum 5 Mbps)
- Local Admin Access (to download maven packages and install required softwares)

6 Software Requirements

- Windows / Linux / Mac OS
- JDK 11
- Eclipse 4.8+ / STS 4+ / Intellij IDE
- Git 2.3+
- Maven 3.4+
- MySQL Server 8+
- MySQL Workbench 8+
- Postman 8+

7 Outline

Module-1: Introduction to Spring (4 hrs)

- Capabilities of the modern Spring ecosystem
- Spring v. Spring Boot
- Factory Pattern
- Dependency Injection and Inversion of Control
- The Application Context
- Spring Beans – Lifecycle Management and Wiring
- Dependency Injection Techniques
- Xml, Annotation and Java based Configuration
- Setting up and configuring development environment
- Lab exercises to practice Spring Core concepts - DI/IoC, Bean Wiring, etc

Module-2: Introduction to Spring Boot (4 hrs)

- Spring Boot Overview
- Spring vs Spring Boot
- Benefits of Spring Boot
- Create Spring Boot Project
    - Spring Maven Project
    - Spring Starter Project
    - Spring Initializr
    - Spring Boot CLI
- Build and run sample Spring Boot Application

Module-3: Spring Boot Features (4 hrs)

- Auto Configuration
- @SpringBootApplication / SpringApplication
- Externalized Configuration
- Logging
- Profiles
- Packaging
- Embedded Container
- DevTools
- Testing

Module-4: Introduction to REST (8 hrs)

- RESTful Webservices Overview
- REST concepts
- SOAP vs REST
- Spring REST Overview
- Controllers and RestControllers
- Configuration
- Content Negotiation
- Controller Mappings
- Customizing Controller Responses
- Testing Rest Services

- REST Clients - Postman, REST Client API, REST Template
- Create and publish RESTful Web Services
- Build client to consume RESTful Web Services
- Lab exercises to practice RESTful Webservices concepts and Spring Boot Integration

Module-5: Data Access with Spring Boot (8 hrs)

- Overview of JDBC and JPA/Hibernate
  - Spring Boot and databases
  - DataSource configuration
  - Initializing Databases for testing
  - Spring Data Repositories
- Embedded Database Support (H2)
- Testing Spring Data
- Sample web application with data access using Spring Boot

Module-6: Monitoring and Management (4 hrs)

- Actuator Overview
- Exploring available Endpoints
- Configuring Endpoint availability
- Securing Endpoints
- Creating custom Endpoints