Core Spring

DELIVERY METHODS

- Public (classroom and virtual)
- Private, onsite

COURSE DURATION

- Four days of instructor-led training

TARGET AUDIENCE

Application developers who want to increase their understanding of Spring with hands-on experience and a focus on fundamentals.

PREREQUISITES

- Basic understanding of application development using Java
- IDE (Eclipse or STS preferred); STS is used in the course

PRICING

Please visit our website at pivotal.io/training

MORE INFORMATION

On-site training is also available for customers who prefer to bring a Pivotal Certified Instructor to their own facilities For more information about on-site classes, contact us at pivotal.io/training/contact.

COURSE OVERVIEW

This course offers hands-on experience with Spring and its major features, including configuration, data access, web and REST applications, Spring Boot, Spring Security and using Spring Cloud to build a small microservices application. On completion, participants will have a foundation for creating enterprise-ready applications.

This course prepares students for the Spring Professional certification exam. Certification exams are sold separately.

COURSE OBJECTIVES

Upon completion of this course, participants will understand how implement the following::

- Spring configuration using Java, Annotations and XML
- Aspect oriented programming with Spring
- Testing Spring applications
- Data Access - JDBC, JPA and Spring Data
- Using Spring for Transaction Management
- Building Web Applications with Spring MVC
- Spring Boot - introductory and advanced topics
- Implementing REST with Spring MVC and RestTemplate
- Spring Security
- Microservices with Spring Cloud

COURSE MODULES

1. INTRODUCTION TO SPRING

- Java configuration and the Spring application context
- @Configuration and @Bean annotations
- @Import: working with multiple configuration files
- Launching a Spring Application and obtaining Beans

2. SPRING JAVA CONFIGURATION: A DEEPER LOOK

- External properties & Property sources
- Environment abstraction
- Bean scope, bean profiles
- Spring Expression Language (SpEL)
- How it Works: Inheritance based proxies

3. ANNOTATION-BASED DEPENDENCY INJECTION

- Autowiring and component scanning
- Java configuration versus annotations, mixing.
- Lifecycle annotations: @PostConstruct and @PreDestroy
- Stereotypes and meta-annotations

4. XML DEPENDENCY INJECTION

- XML syntax, constructor & setter injection
- Resource prefixes
- Namespaces and best practices when using XML
- XML profile selection
- Using Spring FactoryBeans with Java or XML configuration

5. THE BEAN LIFECYCLE: HOW DOES SPRING WORK INTERNALLY?

- The init phase: available interceptors
- The init phase: what is the difference between XML, annotations and Java configuration?
- The use and destruction phases

6. TESTING A SPRING-BASED APPLICATION

- Spring and Test Driven Development
- @ContextConfiguration and @RunWith annotations
- Application context caching and the @DirtiesContext annotation
- Profile selection with @ActiveProfiles
- Easy test data setup with @Sql

7. ASPECT-ORIENTED PROGRAMMING

- What problems does AOP solve?
- Differences between Spring AOP and AspectJ
- Defining pointcut expressions
- Implementing an advice: @Around, @Before, @After

8. DATA ACCESS AND JDBC WITH SPRING

- How Spring integrates with existing data access technologies
- DataAccessException hierarchy
- Implementing caching using @Cacheable
- jdbc namespace and Spring‘s JdbcTemplate

9. DATABASE TRANSACTIONS WITH SPRING

- Transactions overview
- Transaction management with Spring
- Isolation levels, transaction propagation and rollback rules
- Transactions and integration testing

10. JPA WITH SPRING AND SPRING DATA

- Quick introduction to ORM with JPA
- Benefits of using Spring with JPA
- JPA configuration in Spring
- Spring Data JPA dynamic repositories

COURSE MODULES cont.

11. SPRING IN A WEB APPLICATION

- Configuring Spring in a Web application
- Introduction to Spring MVC, required configuration
- Controller method signatures
- Views and ViewResolvers
- Using @Controller and @RequestMapping annotations

12. SPRING BOOT

- Using Spring Boot to bypass most configuration
- Simplified dependency management with starter POMs
- Packaging options, JAR or WAR
- Easily overriding Spring Boot defaults

13. SPRING BOOT - GOING FURTHER

- Going beyond the default settings
- Customizing Spring Boot configuration
- Logging control
- Configuration properties using YAML
- Boot-driven testing

14. SPRING SECURITY

- What problems does Spring Security solve?
- Configuring authentication and intercepting URLs
- The Spring Security tag library for JSPs
- Security at the method level
- Customizing the Spring Security filter chain
- Understanding the Spring Security filter chain

15. REST WITH SPRING MVC

- An introduction to the REST architectural style
- Controlling HTTP response codes with @ResponseStatus
- Implementing REST with Spring MVC, @RequestBody, @ ResponseBody
- Spring MVC's HttpMessageConverters and automatic content negotiation

16. MICROSERVICES WITH SPRING CLOUD

- Microservice Architectures
- Challenges with cloud-native applications
- Using Spring Cloud
- Developing a simple microservice system

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