Updated on 11/10/2024

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Spring training: Developing enterprise applications

4 days (28 hours)

Presentation

The Spring framework takes care of the plumbing for enterprise applications, so you can concentrate on what's really important: business logic at the application level.

Spring is an open source framework that provides a reliable and efficient development environment that simplifies application development on the Java Enterprise Edition (Java EE) platform.

Spring requires no changes to the source code. You can easily implement transaction management, database access and interfaces. This gives you a valuable advantage when it comes to integration and unit testing.

Our Spring training course will teach you how to use Spring to develop enterprise applications. You'll learn about Aspect-Oriented Programming (AOP), good development practices and how to secure your project.

As with all our training courses, this one will introduce you to the latest version of the tool, Spring 5.3.

Objectives

- Understanding Spring mechanisms and its role in Java technologies
- Developing Java applications with Spring
- Set up IDEs and Spring configuration
- How to create GUIs
- Understanding the benefits of Aspect-Oriented Programming (AOP)
- Manage application component configuration
- Create a data access service

- Mastering development best practices with Spring

Target audience

- Java and Java EE developers
- Architects
- Project managers

Prerequisites

- Have taken our java training course
- Knowledge of the Java EE ecosystem
- Experience in application development

Our Spring training program: Developing enterprise applications

Spring fundamentals

- Spring components
- The Spring core
- The Spring ecosystem
- Setting up the IDE
- Configuration
- What is a Spring lightweight container?

Control inversion and dependency injection

- Two control inversion techniques
  - Dependency search
    - Querying a controller
  - Principle of dependency injections
    - Injection by the manufacturer
    - Modifier injection
    - Interface injection
- SOLID principle
  - Separating module contracts
  - Reduce the number of module contracts

Aspect-oriented programming (AOP)

- What is POA?
- POA modules
- Using POA through XML configuration
- Using POA through annotations

Bean definition and management

- Creating a Maven project
- Adding new beans
- Using stereotype annotation to add beans to Spring
- Programmed addition of beans
- Implementation of relationships between beans defined in the configuration file
  - Wiring beans using a direct call between @Bean methods
  - Wiring beans using @Bean annotated method parameters
- Using the @Autowired annotation to inject beans
  - Use @Autowired to inject values through class fields
  - Use @Autowired to inject values through the constructor
  - Using dependency injection through the setter
- Circular dependency management
- Choice of several beans

Web interfaces

- Spring Cloud Zuul
- Caching Options
- Resource Expansion
- Protocol Conversion
- Zuul and ETags

Spring MVC

- A reminder about the Model View Controller
- Spring MVC capabilities for web application development
- Spring Web MVC and its components
- Spring Web MVC architecture
- Implementing a web GUI with Spring MVC
  - Pattern MVC
  - Model access
  - Validation
  - Internationalization
  - Exception handling
- Configuring a Spring MVC application

Spring Data: access to Spring data

- Access to Spring data
  - JDBC
  - ORM
- Implementing CAD using Spring Data
- NoSQL database
- Implementing application persistence with Spring Data Access
- Basic interfaces
- Query methods
- Spring Data JPA
  - Custom queries
  - QueryDsl
  - Specification
  - Miscellaneous
- Spring Data Neo4j
- Spring Data MongoDB

Developing REST applications with Spring

- Setting up a REST API
- Spring REST architecture
- Creating a REST web facade
- Building a Hello World REST application
- REST application access tools
- Start-up project templates

Safety in Spring

- Securing your application with Spring
- Secure routing
- Authentication modes

Spring Boot

- Deploying Spring Boot applications
- Automatic configuration
- Dependency management
- Packaging (war, jar, OCI image)

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.