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Spring Boot Mastery

From Code to Cloud in 3 days

FA-0421 · 3 days

Software Development · DevOps, Cloud & Infrastructure · Cybersecurity

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Introduction

The ability to build scalable, cloud-native applications is paramount. Spring Boot, a powerful framework for creating stand-alone, production-grade applications, has become a cornerstone in modern software development. This course is meticulously designed for seasoned programmers who are new to Java but eager to harness the capabilities of Spring Boot in conjunction with AWS services, Linux-based development environments, and contemporary tools like Kafka and AI integrations.

Learning outcomes

By the end of this course, participants will be able to:

- Develop and deploy Spring Boot applications on Linux servers using VS Code.
- Integrate Spring Boot applications with AWS services such as EKS, Lambda, SQS, Secrets Manager, and CloudWatch.
- Implement basic CI/CD pipelines for automated testing and deployment.
- Troubleshoot common issues in Spring Boot applications.
- Optionally, integrate Spring Boot applications with Kafka and AI APIs for advanced functionalities.

Prerequisites

Participants should have:

- Proficiency in programming concepts and experience with languages (even if it is with languages other than Java).
- Basic understanding of Linux command-line operations.
- Familiarity with version control systems, particularly Git.
- An AWS account with appropriate permissions for deploying and managing services.

Training outline

1. 1. Introduction to Spring Boot

- Understanding the Spring ecosystem.
- Setting up a Spring Boot project using Spring Initializr.
- Exploring project structure and key components.
- Building and running a simple RESTful API.

2. 2. Development Environment Setup

- Configuring VS Code for Java and Spring Boot development.
- Installing necessary extensions and plugins.
- Setting up a Linux-based development environment.
- Managing dependencies with Maven or Gradle.

3. 3. Building Non-RESTful Applications with Spring Boot

- Introduction to Spring MVC with Thymeleaf
- Understanding the MVC architecture in Spring Boot.
- Setting up Thymeleaf as the templating engine.
- Creating dynamic HTML pages using Thymeleaf syntax.
- Handling Form Submissions
- Building web forms and binding form data to model objects.

- Validating user input using Spring’s validation framework.
- Processing form data and rendering response views.
- Serving Static and Dynamic Content
- Organizing and serving static resources (CSS, JS, images).
- Generating dynamic content using templates and model attributes.

4. 5. Building RESTful APIs with Spring Boot

- Creating controllers, services, and repositories.
- Implementing CRUD operations.
- Handling exceptions and validations.
- Testing APIs using tools like Postman.
- Authentication

5. 6. Integrating with AWS Services

AWS CLI and SDK for Java

- Configuring AWS CLI on Linux.
- Using AWS SDK for Java to interact with AWS services.

Amazon EKS (Elastic Kubernetes Service)

- Deploying Spring Boot applications to EKS clusters.
- Managing deployments and services.

6. 5. Implementing CI/CD Pipelines

- Setting up version control with Git.
- Configuring build tools for automated testing.
- Deploying applications using CI/CD tools like Jenkins or GitHub Actions.
- Managing deployment environments and rollbacks.

7. 6. Troubleshooting and Debugging

- Identifying common issues in Spring Boot applications.
- Using logs and debugging tools effectively.
- Performance tuning and optimization strategies.

8. 7. Optional: Integrating Kafka and AI APIs

Apache Kafka Integration

- Setting up Kafka producers and consumers.
- Handling real-time data streams.
- Managing topics and partitions.

AI API Integration

- Connecting to AI services using RESTful APIs.
- Processing and analyzing data with AI models.
- Implementing AI-driven features in applications.

This course is led by an instructor with over 30 years of industry experience, ensuring that the content is grounded in real-world applications and best practices. Participants will gain hands-on experience and insights that go beyond theoretical knowledge, preparing them to tackle real challenges in modern software development.

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