Faysal Aziz

Spring Boot Web Development

Empowering PHP Developers to Build, Deploy, and Scale with Spring Boot - 3 days

FA-0422 · 3 days

Software Development · DevOps, Cloud & Infrastructure

Introduction

This foundational course in **Spring Boot for Web App Development** is designed specifically for **PHP developers** transitioning to **Java** and looking to build real-world, scalable applications. By focusing on **remote development environments** using **VS Code's SSH plugin** to connect to Linux servers, we eliminate the typical frustrations and limitations of local setups. This hands-on course equips you with the skills to go from development to deployment, providing you with tools and techniques actively sought after in the industry. Spring Boot's simplified Java configuration for enterprise-level applications will give you the power to build, test, and deploy in a production-like environment, all while bypassing theoretical pitfalls.

Instructor Profile: With over **30 years of industry experience**, your instructor brings a wealth of knowledge in enterprise application development, deployment strategies, and real-world problem-solving. No abstract academia—just industry-demanded skills, directly applicable to your day-to-day development tasks.

Learning outcomes

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

- Understand and set up a **remote development environment** using **VS Code SSH plugin** on Linux servers for Spring Boot projects.
- Develop a web application using **Spring Boot** and **Java** by leveraging **REST APIs**, **MVC architecture**, and **dependency injection**.
- Integrate **databases** and perform **CRUD operations** using Spring Data JPA.
- Secure applications using **Spring Security**, managing roles and authentication flows.

- Deploy a Spring Boot application on a **remote server** and configure the environment for real-world performance.
- Apply industry best practices for developing, testing, and deploying scalable Spring Boot applications.

Prerequisites

- **Basic understanding of PHP** and web development principles (MVC, HTTP, etc.).
- Familiarity with **basic Linux commands** and the **command line**.
- A basic understanding of **object-oriented programming (OOP)**.
- Willingness to adapt to a new programming language and development environment (Java).

Training outline

1. Introduction to Remote Development Environment for Spring Boot

1. Why local setups are obsolete for serious development

   Installing and configuring **VS Code** for remote development

   1. Setting up the **SSH plugin** in VS Code
   2. Connecting to a remote **Linux server**
   3. Configuring the remote environment for Java and Spring Boot development
   4. Basic Linux commands necessary for remote navigation and file management

2. Setting Up a Spring Boot Project

1. Overview of **Spring Boot** and how it simplifies Java application development

   Creating a Spring Boot project via **Spring Initializr**

   1. Understanding project dependencies (Spring Web, Spring Data JPA, H2, etc.)
   2. Explaining Maven/Gradle for managing dependencies

   Project structure overview

   1. src/main/java and src/main/resources folders
   2. Application.properties configuration basics
4. Understanding **Dependency Injection** and the **Spring Context**

3. Building REST APIs with Spring Boot

1. **Understanding REST** principles and why REST is crucial in modern web applications

Creating **Controller** classes for handling requests

1. **GET, POST, PUT, DELETE** HTTP methods

3. Handling **request parameters** and **path variables**
4. **Error handling** and **custom exception handling** in Spring Boot
5. Testing REST APIs with **Postman** or **cURL**

4. Working with Databases and Spring Data JPA

Introduction to **Spring Data JPA** and **object-relational mapping (ORM)**

1. Understanding the concept of **Entities** and **Repositories**

Setting up an **H2 in-memory database** for development

1. Switching to a **MySQL/PostgreSQL** database on the remote server for testing

Performing **CRUD operations** using Spring Data JPA

1. Saving, updating, deleting, and fetching data
2. Pagination and sorting with repositories

4. Writing **custom queries** using the **@Query** annotation

5. Adding Security to Your Application with Spring Security

1. Introduction to **Spring Security** for securing web applications
2. Setting up **basic authentication** and **role-based access control**
3. Configuring **password encoding** and user roles

Securing REST APIs with **JWT (JSON Web Tokens)**

1. Authentication vs. Authorization: Key differences
2. Configuring **JWT filters** for securing endpoints

6. Deploying Spring Boot Applications to a Remote Linux Server

Preparing your Spring Boot application for deployment

1. Understanding **application.properties** configuration for production
2. Setting up **profiles** for dev and production environments

Packaging the Spring Boot app into a **JAR file** for deployment

1. Introduction to **Maven** packaging commands

Setting up the **remote Linux server** for hosting the application

1. Installing and configuring **Nginx** or **Apache** as a reverse proxy
2. Managing the Spring Boot application with **Systemd**

Ensuring **scalability** and performance optimization

1. Introduction to **Dockerizing** a Spring Boot app
2. Overview of deploying the app on **cloud platforms** (AWS, DigitalOcean, etc.)

7. Testing and Debugging in the Remote Environment

1. Writing and executing **unit tests** using **JUnit** and **Mockito**

   Logging in Spring Boot and remote debugging using **VS Code**

   1. Setting up **breakpoints** for debugging remotely
   2. Monitoring application performance using **remote logging**

By the end of this course, you will have developed, secured, and deployed a fully functional Spring Boot web application in a **production-like remote environment**, ready for real-world use. No academic fluff—just practical, deployable code!

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