

KOENIG SOLUTIONS · COURSE OUTLINE

Java Full Stack Spring Boot and Angular with Advanced Java

Learn to build full stack Java applications with Spring Boot and Angular, from core Java to deployment.

10

MODULES

114

TOPICS

COURSE OVERVIEW

This course covers core Java programming and object-oriented concepts before moving into the Spring Boot framework, including configuration, controllers, services and RESTful web service development. It then addresses data access using relational databases, JDBC, JPA and Hibernate, followed by building web applications with Spring MVC. The course continues into Angular, covering components, services, routing, forms, data handling with HTTP and observables, and consuming APIs. It closes with deploying Spring Boot and Angular applications, including continuous integration, Docker and security.

WHO THIS COURSE IS FOR

Java Developers

Backend Developers

Front-End Developers

Full Stack Developers

Web Application Developers

LEARNING OBJECTIVES

- Explain core Java syntax, data types, and control flow
- Apply object-oriented concepts such as inheritance and polymorphism
- Build RESTful web services using Spring Boot
- Configure data access with JPA, Hibernate and Spring Data JPA
- Develop web applications using the Spring MVC framework
- Build Angular components, services and routing
- Implement data handling in Angular using HTTP and observables
- Deploy Spring Boot and Angular applications to cloud platforms

10 Modules, 114 Topics

01

Introduction to Java

Module 1: Introduction to Java is an introductory course designed to provide students with a comprehensive overview of the Java programming language. This module covers the fundamentals of the language, including variables, data types, operators, control flow, classes, objects, and more. It also introduces the Spring Boot and Angular frameworks, which are used to build modern web applications. By the end of this module, students will have a solid understanding of the Java language and be able to start building their own applications.

TOPICS

- Overview of Java and its features
- Setting up the development environment
- Understanding the Java language syntax
- Working with variables, data types, and operators
- Writing and executing Java programs
- Working with classes and objects
- Understanding inheritance and polymorphism
- Working with exceptions and error handling
- Working with packages and libraries
- Working with threads and concurrency
- Working with collections and generics
- Working with JDBC and databases
- Working with web services and REST APIs
- Working with Spring Boot and Angular frameworks

02

Object-Oriented Programming with Java

Module 2 of the Java Full Stack Spring Boot and Angular course focuses on Object-Oriented Programming with Java. It covers topics such as classes, objects, inheritance, polymorphism, and interfaces. Students will learn how to create and use classes, create and use objects, and use inheritance and polymorphism to create more efficient and reusable code. Additionally, students will learn how to use interfaces to create more flexible and extensible code.

TOPICS

- Introduction to Object-Oriented Programming
- Classes and Objects
- Inheritance and Polymorphism
- Interfaces and Abstract Classes
- Exception Handling
- Generics
- Collections Framework
- Streams and Lambda Expressions
- JavaFX
- Java Database Connectivity (JDBC)
- Java Networking
- Java Security
- Java Web Services
- JavaBeans
- Java Applets
- Java Native Interface (JNI)
- Java Reflection API
- Java Native Access (JNA)
- Java Native Development Kit (JDK)
- Java Persistence API (JPA)

03

Spring Boot Basics

Module 3 of the Java Full Stack Spring Boot and Angular course covers the basics of Spring Boot, a popular Java framework for creating web applications. Students will learn how to create a basic Spring Boot application, configure it, and deploy it to a web server. Additionally, students will learn how to use the Spring Boot CLI to create and manage projects, as well as how to use the Spring Boot Actuator to monitor and manage applications.

TOPICS

- Introduction to Spring Boot
- Setting up a Spring Boot Project
- Configuring Spring Boot Properties
- Working with Controllers and Services
- Creating RESTful APIs with Spring Boot
- Working with Spring Data JPA
- Integrating Spring Boot with Angular
- Deploying Spring Boot Applications
- Troubleshooting Spring Boot Applications
- Best Practices for Spring Boot Development

04

Building RESTful Web Services with Spring Boot

Module 4 of the Java Full Stack Spring Boot and Angular course focuses on building RESTful web services with Spring Boot. Students will learn how to create and configure a Spring Boot application, create RESTful web services, and use Spring Boot to create a secure web application. Additionally, students will learn how to use Spring Boot to create a web application with a database and how to deploy the application to the cloud.

TOPICS

- Introduction to RESTful Web Services
- Designing RESTful APIs
- Implementing RESTful Web Services with Spring Boot
- Securing RESTful Web Services
- Testing RESTful Web Services
- Deploying RESTful Web Services
- Consuming RESTful Web Services with Angular
- Troubleshooting RESTful Web Services
- Advanced Topics in RESTful Web Services

05

Working with Relational Databases and JPA

Module 5 of the Java Full Stack Spring Boot and Angular course focuses on working with relational databases and JPA (Java Persistence API). Students will learn how to create and manage databases, use JPA to access and manipulate data, and use the Spring Data JPA framework to create data access layers. Additionally, students will learn how to use the Hibernate ORM framework to map objects to database tables.

TOPICS

- Introduction to Relational Databases
- Understanding the SQL Language
- Working with JDBC
- Introduction to JPA
- Configuring JPA
- Working with Entities
- Querying with JPQL
- Advanced JPA Features

Working with Relational Databases and JPA (continued)

TOPICS (CONTINUED)

- Working with Native Queries
- Transactions and Concurrency
- Caching with JPA
- Integrating JPA with Spring Boot
- Building a REST API with Spring Boot and JPA

06

Building Web Applications with Spring MVC

Module 6 of the Java Full Stack Spring Boot and Angular course focuses on building web applications with Spring MVC. Students will learn how to create a web application using the Spring MVC framework, as well as how to configure and deploy the application. Additionally, students will learn how to use the Spring MVC framework to create RESTful web services and how to integrate Angular with Spring MVC.

TOPICS

- Introduction to Spring MVC
- Configuring Spring MVC
- Creating Controllers and Views
- Working with Form Data
- Validating Form Data
- Working with Database and JPA
- Implementing Security
- Creating RESTful Web Services
- Integrating with Angular
- Deploying Spring MVC Applications

07

Introduction to Angular

Module 7 of the Java Full Stack Spring Boot and Angular course introduces students to the Angular framework. Students will learn the basics of Angular, including components, modules, services, and routing. They will also learn how to create a basic application using Angular and how to integrate it with a Spring Boot backend. By the end of the module, students will have a good understanding of how to use Angular to create dynamic web applications.

TOPICS

- Introduction to Angular Architecture
- Setting up an Angular Development Environment
- Creating Components and Services
- Working with Data and HTTP Requests
- Routing and Navigation
- Building Reactive Forms
- Using Pipes and Directives
- Working with Modules and Dependency Injection
- Testing Angular Applications
- Deploying an Angular Application

08

Building Single Page Applications with Angular

Module 8 of the Java Full Stack Spring Boot and Angular course focuses on building single page applications with Angular. Students will learn how to create a basic Angular application, use components, and create services. They will also learn how to use the Angular CLI to create and manage projects, as well as how to use the Angular Router to create routes and navigate between pages. Finally, they will learn how to use the Angular HttpClient to make API calls and consume data from a backend.

TOPICS

- Introduction to Angular
- Setting up the Development Environment
- Creating Components and Services
- Working with Data and HTTP
- Routing and Navigation
- Building Reusable Components
- Working with Forms
- Testing Angular Applications
- Deploying Angular Applications
- Debugging Angular Applications

09

Working with Data and APIs in Angular

Module 9 of the Java Full Stack Spring Boot and Angular course focuses on working with data and APIs in Angular. Students will learn how to use the Angular HTTP client to make requests to a server, how to use observables to handle asynchronous data, and how to use the Angular Router to navigate between components. Additionally, students will learn how to use the Angular CLI to create and manage projects, and how to use the Angular Material library to create user interfaces.

TOPICS

- Introduction to Data and APIs in Angular
- Working with HTTP Requests in Angular
- Consuming RESTful APIs in Angular
- Using Observables to Handle Asynchronous Data
- Working with Local Data Storage in Angular
- Creating Custom Services to Manage Data
- Implementing Authentication and Authorization with Angular
- Securing Data with Angular
- Debugging Data and API Issues in Angular
- Testing Data and API Services in Angular

Deploying Spring Boot and Angular Applications

Module 10 of the Java Full Stack Spring Boot and Angular course covers the process of deploying Spring Boot and Angular applications. It covers topics such as setting up a production environment, deploying applications to the cloud, and configuring continuous integration and delivery. Additionally, the module covers topics such as setting up a database, configuring security, and troubleshooting deployment issues.

TOPICS

- Overview of Deployment Strategies
- Setting up a Continuous Integration Pipeline
- Deploying Spring Boot Applications to Cloud Platforms
- Deploying Angular Applications to Cloud Platforms
- Automating Deployment with Docker
- Securing Deployed Applications
- Troubleshooting Deployment Issues
- Best Practices for Deployment

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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