

Introduction to Spring 5, Spring Boot, and Spring REST

Course Duration: 40 Hours

Course Code : SPR-105

1. Course Overview

The *Introduction to Spring 5, Spring Boot, and Spring REST* course provides learners with the fundamental knowledge required to build modern, enterprise-level, and RESTful applications using the Spring ecosystem. You will gain hands-on experience in leveraging Spring 5 for dependency injection, Spring Boot for rapid application development, and Spring REST for building scalable APIs. By the end of this course, you will be able to create microservices and deploy them effectively.

2.2. What You'll Learn

- Understand the core features and architecture of **Spring 5**.
- Explore **Spring Boot** for rapid application development.
- Build **RESTful web services** using Spring REST.
- Learn dependency injection and aspect-oriented programming.
- Implement data persistence with Spring Data JPA.
- Configure Spring applications with annotations and Java-based configuration.
- Develop and consume REST APIs with JSON/XML support.
- Secure applications with Spring Security basics.

3.3. Target Audience

- Java developers aiming to build modern applications.
- Backend developers transitioning to microservices architecture.
- Professionals preparing for **Spring developer certifications**.
- Students or freshers with Java knowledge wanting to start in enterprise app development.

4.4. Pre-Requisites

- Basic understanding of **Java programming**.
- Familiarity with **object-oriented programming (OOPs)**.
- Knowledge of **web technologies** (HTTP, JSON, XML) is helpful.
- Prior exposure to JDBC/SQL is an advantage.

5.5. Course Content

Module 1: Introduction to Spring Framework 5

- Overview of Spring Framework
- Inversion of Control (IoC) and Dependency Injection (DI)
- Configuring beans with XML and annotations
- Spring Container and Application Context

Module 2: Spring Core and AOP

- Bean lifecycle and scopes
- Autowiring in Spring
- Introduction to Aspect-Oriented Programming (AOP)
- Creating and applying aspects

Module 3: Introduction to Spring Boot

- What is Spring Boot?
- Advantages over traditional Spring
- Auto-configuration and Spring Boot starter dependencies
- Spring Boot application structure and setup

Module 4: Building REST APIs with Spring REST

- REST architecture and principles
- Creating REST controllers
- Request handling with `@GetMapping`, `@PostMapping`, etc.
- Returning JSON and XML responses

Module 5: Data Persistence with Spring Data JPA

- Introduction to JPA and Hibernate
- Setting up Spring Data JPA with Spring Boot
- CRUD operations using repositories
- Pagination and sorting

Module 6: Exception Handling and Validation in REST APIs

- Exception handling with `@ControllerAdvice`
- Custom error responses
- Validating request data with annotations

Module 7: Securing Spring Applications

- Introduction to Spring Security
- Authentication and authorization basics
- Securing REST endpoints

Module 8: Spring Boot Actuator and Deployment

- Monitoring with Spring Boot Actuator
- Health checks and metrics
- Packaging and deploying Spring Boot applications

