



Working with Spring REST

Next-Level Spring: Best Practices for Writing RESTful Services in Java using Spring Boot

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Course Snapshot

- **Course:** Working with Spring REST (TT3358)
- **Duration:** 2 days
- **Skill-Level:** Intermediate
- **Audience:** This is an introduction to Spring REST course for intermediate-skilled Java developers with incoming Spring and Spring Boot experience. This course is not for developers new to Java, or new to Spring / Spring Boot.
- **Hands-on Learning:** This course is approximately **50% hands-on**, combining expert lecture, real-world demonstrations and group discussions with machine-based practical labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **flexible blended learning format** for combined onsite and remote attendees. Please also ask about our **Self-Paced / Video / QuickSkills or Mini-Camp Flex Hours / Short Course** options.
- **Public Schedule:** This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please inquire for details.

Overview

Spring REST focuses on providing an understanding of the fundamental principles and technologies that are used in the development of RESTful services and clients. This understanding is critical to being able to diagnose, troubleshoot, tune, and perform other lifecycle activities.

Working with Spring REST is a two-day, fast-paced coding course geared for experienced developers who have prior working knowledge of Java. Throughout the course students learn the best practices for writing Restful services in Java using Spring Boot. The course provides an in-depth view of the APIs provided by Spring to develop both the REST service and the REST client.

Learning Objectives

This “skills-centric” course is about **50% hands-on lab and 50% lecture**, designed to train attendees in core Cucumber and web testing skills, coupling the most current, effective techniques with the soundest industry practices. Working within an engaging, hands-on learning environment, guided by our expert team, attendees will:

- Learn the request-response cycle of REST requests
- Implement a REST controller using Spring
- Map URLs to service endpoints
- Use Spring's template class to develop a REST client
- Bootstrap a Spring REST applications
- Return different media types for a service
- Setting the response headers
- Discuss Exceptions and HTTP Status codes
- Handle exceptions thrown by a service

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional Spring, Java / JEE programming, Microservices / Services, REST, TDD / testing, design, application security and other related topics that may be blended with this course for a track that best suits your needs.

Audience & Pre-Requisites

This is an **intermediate-level** Java development course geared for students experienced with Java and Spring programming essentials. This course does not cover Java or Spring development basics.

Take Before: Students should have development skills at least equivalent to the following course(s) or should have attended as a pre-requisite:

- TT3350 - Core Spring Boot
- TT3320 - Introduction to Spring 5.x
- TT3351 - Spring Boot and Spring Data

Follow On Courses / Take After: Our Next-Level Java and Spring developer courses provide students with a solid foundation for continued learning based on role, goals, or their areas of specialty. Our learning paths offer a wide variety of follow-on courses such as:

- Continued Spring: Core, Boot, REST, Data, Web, Cloud, Security, Reactive Spring & More
- Continued Java & JEE Programming: Advanced Java, Microservices / Web Services / REST, RXJava, Tuning, Patterns, Test Driven Development / Unit Testing & More
- Secure Java Coding / Java & JEE Security and secure web application development training
- Please contact us for recommended next steps tailored to your longer-term education, project, role or development objectives.

Enhanced Learning Services: Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services, Case Studies, Knowledge Check Quizzes, Skills Immersion Programs & Camps, Collaborative Mentoring Services and Extended Learning Support & Post Training** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience skill-level, interests and participation.

Session: Implementing REST with Spring

Lesson: REST principles

- Introduce the six architectural constraints of REST
- Introduce Resources and Resource representations
- Best practices for defining Resource URIs
- Tutorial: Setup Eclipse for Using Maven

Lesson: Introduction to RESTful Services in Spring

- Discuss the request-response cycle of REST requests
- Defining a REST Controller in Spring
- Explain the @ResponseBody annotation
- Define request mappings
- Use path variables
- Lab: Working with Spring REST

Lesson: Introduction to REST Clients in Spring

- Introduce RestTemplate class
- Making GET, POST, PUT, HEAD,

OPTIONS and DELETE requests

- Introduce the UriTemplate class
- Using HttpEntity and RequestEntity
- Use the exchange method to define 'complex' requests
- Process requests and responses using callback
- Configure the RestTemplate
- Lab: Implementing the Spring REST Client

Lesson: Bootstrapping the REST application

- Describe steps needed to bootstrap Spring REST application
- Configure Content Representation libraries
- Configure Spring MVC and map the Dispatcher Servlet
- Explain the advantages of using Spring Boot to setup the REST project
- Setup a Spring REST application using Spring Boot
- Lab: Spring Hotel Reservation
- Lab: Spring Hotel Reservation Client

Lesson: Content Representation

- Returning different media types from service
- Introduce negotiated resource representation
- Configure Message Converters
- Lab: Spring REST Content Negotiation

Lesson: Implementing the REST Service

- Process for Spring REST Implementation
- The Domain object
- Using Project Lombok to define the domain object
- (Not) Using Data Transfer Objects
- ResponseEntity builder interfaces
- Setting Location header using UriComponentsBuilder
- Lab: Spring REST Services

Lesson: Error Handling

- Handling Exceptions and HTTP Status codes
- Using @ResponseStatus
- Exception handler methods in controller
- Using Controller advices to

- handle exception
- The RuntimeException class
- Lab: Spring REST Exceptions

Session: Security and RESTful Services**Lesson: Securing Untrusted Input**

- Input Data Attacks

- Protecting a Web Service
- Tenacious D
- Responding to Error State

Lesson: Defending RESTful Services

- How Attackers See REST
- Factors that Increase Attack Surface
- Data Tampering

- Cross Site Scripting
- Bridging and its potential Problems
- Dangerous Developer Assumptions
- Three Basic Tenets for Safe RESTfulness

Course Materials: Each student will receive a **Student Guide** with course notes, code samples, software tutorials, step-by-step written lab instructions, diagrams and related reference materials and links (as applicable). Students will also receive the project files (or code, if applicable) and solutions required for the hands-on work.

Hands-on Setup Made Simple! Our dedicated tech team will work with you to **ensure your student machines and learning environment is setup, tested and ready to go** well in advance of the course delivery date, ensuring a smooth start to class and seamless hands-on experience for your students. We offer several flexible student machine setup options including **guided manual set up** for simple installation directly on student machines, or **cloud based / remote hosted lab solutions** where students can log in to a complete separate lab environment minus any installations, or we can supply **complete turn-key, pre-loaded equipment** to bring ready-to-go student machines to your students or in-person facility. Please inquire for details.

For More Information

Need dedicated training? All courses can be presented **onsite** or **online**, or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses, self-paced learning options, recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training, Boot Camps, Skills Immersion Programs, Reskilling Programs, Skills Migration & Transition Programs**, and more. We collaborate with you to ensure all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

For more information about our dedicated training services, collaborative mentoring services, courseware licensing options, courseware development services, public course schedule, training management services, partner and reseller programs, or to see our complete list of course offerings and special offers please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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