



Java: Developing RESTful Services in Java 1.1

Course ID#: 1260-451-01-W

21 Hrs

Course Content

Course Description:

This course shows experienced Java programmers how to build RESTful web services using the Java API for RESTful Web Services, or JAX-RS. We begin with an overview of web services development in the Java EE platform, including SOAP, WSDL, REST; JAX-WS, JAXB, and JAX-RS. Then students learn to work with JAXB to bind Java object models to XML Schema. The bulk of the course is devoted to study of JAX-RS: students work with the Jersey implementation of JAX-RS to create RESTful services from simple single-value interactions to more sophisticated services that manage CRUD (create/retrieve/update/delete) operations on more complex data types, using JAXB to marshal and unmarshal data over the wire. IDE Support: Eclipse Helios.

In addition to the primary lab files, an optional overlay is available that adds support for Eclipse Helios. Students can code, build, deploy, and test all exercises from within the IDE, and take advantage of built-in editors, integrated debugging, etc.

Prerequisites:

Strong Java programming skills are essential

Students must be able to read XML documents and to write well-formed XML by hand Knowledge of XML Schema will be helpful, too, but is not a strict prerequisite Experience with other Java EE standards, especially servlets and JSP, will be very helpful in class, but is not strictly required.

Topics:

Overview of Web Services

- Why Web Services?
- Service-Oriented Architecture
- HTTP and XML
- SOAP
- WSDL
- The SOAP Vision
- The REST Vision
- UDDI
- The WS-I Basic Profile
- Security

Web Services for Java EE

- Hosting Web Services: Scenarios
- Web Services for Java EE
- JAX-WS and JAXB
- Web-Services Metadata

- WSDL-to-Java and Java-to-WSDL Paths
- Provider and Dispatch APIs
- SAAJ and JAXP
- JAX-RS for RESTful Services
- JAXR

The Java API for XML Binding

- The Need for Data Binding
- XML Schema
- Two Paths
- JAXB Compilation
- Mapping Schema Types to Java
- Java-to-XML Mapping Using Annotations
- Marshaling and Unmarshaling
- Working with JAXB Object Models



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The Java API for RESTful Services

- Applications
- Resources
- Sub-Resources
- Providers
- Scanning and @ApplicationPath

Dispatching Requests to Methods

- The Application Path
- The @Path Annotation
- The HTTP Method Annotations
- Sub-Resource Locators
- Annotation Inheritance and overriding
- Developing RESTful Services in Java (Version 1.1)

Parameter and Return Types

- Simple Parameter Types
- @Consumes and @Produces Annotations
- @XXXParam Annotations
- The @DefaultValue Annotation
- Return Types
- Binary Content
- Delivering a File

Entities and Complex Content

- Entity Providers
- Built-In Entity Providers
- Working with XML
- Driving XML Representations from Schema Context and Lifecycle
- Reading Web Resources
- Finding Java EE Components
- Finding Databases
- Security Contexts

Appendix A.

- Course Tools and Utilities

Appendix B.

- Handy Guide to Web-Services Acronyms