Restful Web Services using JAX-RS API

Duration:

- 4 Weekends - 8 full days – 10 AM to 6 PM
- Hours Breakup

Morning Session 1st Half	10:00 AM	to	11:30 AM	1 Hour 30 Min
Tea Break	11:30 AM	to	12:00 PM	30 Min
Morning Session 2nd Half	12:00 PM	to	1:30 PM	1 Hour 30 Min
Lunch Break	1:30 PM	to	2:30 PM	1 Hour
Evening Session 1st Half	2:30 PM	to	4:00 PM	1 Hour 30 Min
Tea Break	4:00 PM	to	4:30 PM	30 Min
Evening Session 2nd Half	4:30 PM	to	6:00 PM	1 Hour 30 Min

Total number of hours per day : **6 Hours**

Total number of hours for course : **48 Hours**

Benefits:

- Along with learning Restful Web services using JAX-RS API, you'll also learn
  - XML & JAXB API
  - JSON & Jackson Framework
- You'll learn/update/refine your Java knowledge (like Annotations, Inner Classes and Enum's)
- You'll get exposed to many other widely used development tools (see below)
- By the end of the course you'll be doing/having live web service examples which interact with many web application as listed below using Restful web services
  - Google Maps
  - Freegeoip
  - openweathermap.org
  - Many More …

Tools Used:

- Maven Build Tool
- GIT Repository & Tortoise GIT Client
- Apache tomcat as the web server
- Eclipse
- Fiddler
- Postman REST Client
- XML Validator
- XJC & Schemagen

Additional Information

Contact:	Pushpa () / Kavya ()
Instructors:	Praveen D (J2EE Tutor of JSpider Basavangudi)
Location:	Floor 2 - Puttanna chetty complex, Bull Temple Road, Basavangudi, Bengaluru, Karnataka - 560004 URL: http://www.jspiders.com/basavanagudi-full

Schedule and Pricing

Below are the details about this activity including schedule and pricing information.

Start Date:	Saturday, November 11, 2017 10:00 AM IST
End Date:	Saturday, November 11, 2017 10:00 AM IST
Estimated Cost:	INR 5000/-

Prerequisites:

This course requires pre-requisite knowledge. It is your responsibility to be appropriately prepared. If you need additional training to ensure sufficient knowledge, we recommend you to join **Core Java & J2EE course**.

- Experience with JAVA programming language
- Experience of developing web applications using servlet and JSP
- Basic knowledge of XML
- Web URL Structure
- HTTP Protocol, its structure & HTTP Methods
- **Candidate need to bring Laptop for practising in class room**

Restful Web Services Table of Contents

Introduction Class

- Overview of Web Services
  - Why Web Services?
  - Service-Oriented Architecture
  - Web Services History
  - Types of Web Services
  - The SOAP Vision
  - The REST Vision
  - Why/What for HTTP, XML and JSON?
  - Real time example of Web Services
  - Web Services Architecture

Day 1

- Installation of necessary applications/tools
  - Maven Introduction & Installation of Maven Build Tool
  - GIT & Tortoise GIT Client
  - Apache Tomcat
  - Eclipse
  - Fiddler
  - Postman REST Client
  - XML Validator
- Creating the First Restful Web Services using Apache Jersey
  - Creating Web Service Producer Application
  - Creating Web Service Consumer Application
  - Accessing Web Service Producer Application using Consumer (Standalone Java Application), Browser & Postman

Day 2

- Introduction to XML
  - Why XML
  - Elements & Attributes
  - XML Schema [DTD & XSD]
  - PCDATA & CDATA
  - Introduction to XPath
  - XML Parsers
  - XML to Java Object and Vice-versa using JAXB example
- Introduction to JSON
  - Why JSON
  - JSON Syntax
  - JSON Data & Values
  - JSON Objects
  - JSON Arrays
  - JSON versus XML
  - JSON to Java Object and Vice-versa using Jackson example

Day 3

- Introduction to JAXB API
  - About Java Annotations

- o Creating & using our own Annotations
- JAXB Annotations
  - o @XmlRootElement
  - o @XmlElement
  - o @XmlAttribute
  - o @XmlType
  - o @XmlElementWrapper
  - o @XmlAccessorType
  - o @XmlTranient
- JAXB Marshalling and Unmarshalling
  - o JAXBContext Class
  - o Marshaller
  - o Unmarshaller
- Introduction to Jackson Framework
  - o Marshalling using Jackson
  - o Unmarshalling using Jackson

Day 4

- HTTP Protocol
  - o HTTP Protocol Structure
  - o Key headers & elements of HTTP Request & Response
  - o "Accept", "Content-Type", "Content-Disposition", "Cache-Control" Headers
  - o HTTP Status Codes
  - o Differences between HTTP & HTTPS
- URI, URL & URN
- JAX-RS API Introduction
  - o Root Resource Classes
  - o Resource Methods
  - o Root Resource Classes with Interfaces
  - o Root Resource Classes with Super Classes
- JAX-RS Annotations
  - o @Path
  - o @<Resource_Method_Designators>
    - @GET
    - @POST
    - @PUT
    - @DELETE
    - @HEAD
    - @OPTIONS
  - o @<*>Param
    - @PathParam
    - @QueryParam
    - @FormParam
    - @HeaderParam
    - @CookieParam
    - @MatrixParam
    - @BeanParam
  - o @DefaultValue
  - o @Produces
  - o @Consumes
  - o @FormDataParam
  - o @ApplicationPath
  - o @Provider
  - o @Context

Day 5

- JAX-RS API Classes & Interfaces
    - MediaType
    - JAXB and JSON JAX-RS Handlers
    - Builder Design Pattern
    - Java's Inner Classes
    - Java's Enum
    - Generating Complex Responses using "Response" Object
    - Request
    - ResponseBuilder
    - Status
    - HttpHeaders
    - Application

Day 6

- HTTP Content Negotiation
    - JAX-RS and Content Negotiation
    - Leveraging Content Negotiation
        - Using Accept Header
        - URL suffix for content negotiation
- Handling Cookies in Restful Web Services
    - Sending Cookie as part of the Response
    - Getting Cookie from the Request
- Uploading & Downloading Files (Dealing with Large Binary Objects)
    - Uploading files using Jersey Framework
        - @FormDataParam Annotation
        - FormDataContentDisposition Class
    - Downloading files using JAX-RS API
- Deployment and Integration
    - Deployment within JAX-RS-Aware Containers
    - Deployment within a JAX-RS-Unaware Container

Day 7

- JAX-RS Client API Classes & Interfaces
    - Client
    - ClientBuilder
    - WebTarget
    - Invocation.Builder
    - GenericType

Day 8

- Exception Handling in Restful web services
- JAX-RS Entity Providers
- JAX-RS Filters and Interceptors