

Specialized - Processing XML Using Java (JAXP)

Code:	TT-4360
Length:	3 days
URL:	View Online

Extensible Markup Language (XML) is a standard that is enabling a revolution in web applications and business to business interactions. XML is the basis for Wireless Markup Language (WML), Voice Markup Language (VoiceML), Simple Object Access Protocol (SOAP), Web Services, and numerous industry initiatives such as ACORD (insurance), PXML (proposal/RFP) and OTA (travel). This course is an intensive, hands-on treatment of how to consume, generate, and transform XML within Java and J2EE applications. The course is a balanced mixture of theory and practical labs designed to take students from the basic fundamentals of XML processing through to the related advanced technologies such as Java/XML interoperability. The students walk through the various APIs in a structured manner to enable them to master the concepts, ideas, and patterns, which are reinforced in the lab exercises.

Skills Gained

This course provides indoctrination into the practical use of the XML-related Java APIs and of implementing applications with them. This course is a Java class, with extensive programming labs. Graduates will hit the ground running, applying Java and XML to projects at both an architectural as well as a line by line coding level. We can easily adapt this course to industry and client specific needs. In addition to valuable knowledge and working examples, students receive a copy of the "Xtensil" product. This unique software was developed to assist in implementing, testing, and fielding XML applications. Xtensil is used as both a teaching aid and a straightforward, basic, fully functional XML toolkit that students can use on Windows and Linux platforms.

Who Can Benefit

This is an intermediary level Java programming course, designed for those needing to process XML from within Java applications.

Prerequisites

Take Before: Students should have basic understanding and experience in the following topics, or attend these courses as a pre-requisite:

- TT4300 Core XML and XSLT

Course Details

Course Overview: Hands-on Learning

Working in a hands-on learning environment student will learn to:

- Programmatically parse well-formed XML documents
- Programmatically validate XML document using DTD and Schemas
- Work with SAX's event-based output

- Work with DOM's node-based output
- Programmatically transform XML into any other text representation using XSLT processors
- Consume, generate, and validate XML using corresponding Java classes
- Recognize XML-related performance issues and problems in Java applications

Delivery Environment

Our lab guides are complete with software-specific instructions, screen shots and detailed tutorials for using the software you select. Please contact us for additional details to assist in making your software selection for this course. In most cases we can easily port our classes to run in the environment of your choosing.

Take After:

We offer a variety of advanced Java and J2EE courses for those members of your team that will be working with technologies such as Spring, Hibernate, JSF, SOA, EJB 3.0, security, and Web Services. They may want consider taking one or more of these courses as a follow-on to this course:

- Service-Oriented Analysis and Design
- Core Web Services
- Securing J2EE Web Applications
- Mastering JSF
- Transitioning to EJB 3.0
- Mastering the Spring Framework
- Applying Hibernate to Persistence in Java
- Integrating Hibernate and Spring
- Advanced J2EE Design Patterns
- Integrating J2EE and AJAX
- Advanced J2EE Topics

XML Review

XML Mechanics

- XML Document Structure
- Well-Formed and Valid XML Documents
- Structure, Content and Format
- Working with XML

JAXP and SAX Parsing

JAXP and SAX (Part 1)

- Processing XML Using Parsers
- Validating and Non-validating
- JAXP Overview
- JAXP Usage Patterns
- SAX Parsing Using JAXP
- Validating Using Nested Schemas

JAXP and SAX (Part 2)

- SAX Events
- SAX API
- Handling Exceptions
- SAX Content Handling
- Designing SAX Content Handlers

JAXP and DOM Parsing

JAXP and DOM (Part 1)

- JAXP Usage Patterns with DOM
- DocumentBuilders
- DOM Parsing Using JAXP
- Validating Using Nested Schemas

JAXP and DOM (Part 2)

- DOM Concepts
- DOM Nodes
- DOM API
- Handling Exceptions
- DOM Operations and Processing
- Designing DOM Processing

XML Formatting

XSL Transformations

- XPath Describes Locations Within XML
- XSLT is Rule-Based Transformation Language
- XSL is Oriented Towards Formatting
- XPath Accesses Parts of Document
- XSLT Templates Specify Output Replacement
- XSLT Uses XPath Expressions Within Templates

XSLT and XPath

- XPath Expressions
- Abbreviated Axis Forms
- Predicates As Optional Filters
- XPath Operators; Functions; Examples
- Working With XPath
- XSLT Stylesheet Structure
- Templates: Rules in a Stylesheet
- Apply-Templates Directs Processing
- value-of to Extract Values

- Built-in Templates
- Text Handling
- Calling Templates
- Passing Parameters
- Conditional Processing Constructs
- Looping With <xsl:for-each>
- Sorting
- Constructing A New Node

Rendering: JAXP and Transformations

XSLT Transformations in Java

- JAXP/TRaX Concepts and Terminology
- Transformer Patterns
- Stream to Stream Transformations
- DOM to DOM Transformations
- Exception Handling with Transformers
- Identity Transforms
- Performance Considerations
- Working With XSLT Processors

Binding Java and XML

XML Interoperability with Java: JAXB

- JAXB Concepts
- JAXB Class Generation
- JAXB Runtime Features
- On-demand Validation
- Consuming XML Using JAXB
- Generating XML Using JAXB

Security and XML

XML Signature, Encryption, and XWSS

- Concepts and Terminology
- XML Signature
- XML Encryption
- XWSS: XML Security

Defending XML

- Understanding Common Attacks And How To Defend
- Operating In Safe Mode
- Using Standards-Based Security

- XML-Aware Security Infrastructure
- JAXP Safe Mode

Applying XML

XML Interoperability

- XML From a Data Perspective
- Application Considerations
- Character Encoding Issues
- Direct XML Storage
- Challenges to Mapping XML
- XML to RDB
- RDB to XML

XML Performance Improvements

- Organization of Best Practices
- Best Practices Review

Web Services Overview (Optional)

- Web Services Defined
- XML in Web Services
- SOAP Specification
- WSDL: Description
- UDDI: Publication and Search
- Web Services Enables Decoupling
- Web Services Advantages
- Many Web Services Challenges
- Web Services Interoperability Organization

XML Applications

- W3C Activities
- Benefits of XML
- Drawbacks of XML
- Data Models in Action
- Data Model Complexity
- Data Model Considerations
- Crossing Boundaries
- Application Architectures
- XML: Lightweight Databases
- Application Integration
- Challenges to Integration
- From Tag to Architecture

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