ProTech Professional Technical Services, Inc.

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Comprehensive XML

Course Summary

Description

This comprehensive XML training class teaches students to create well-formed XML documents, to build sophisticated XML Schema for validating XML documents and to build eXtensible Stylesheets (XSLs) for transforming XML documents into XHTML, and other XML structures.

Objectives

At the end of this course, students will be able to:

- Learn to create well-formed XML documents.
- Learn the difference between HTML and XHTML.
- Learn to create basic DTDs.
- Learn to create basic XML schemas.
- Learn to validate XML documents against DTDs and XML schemas.
- Learn to create basic XSLTs to transform XML documents for output as text, HTML, and other XML structures.
- Learn the purpose and power of XML Schema
- Learn to declare simple-type and complex-type elements
- Learn to derive custom types

- Learn to declare attributes
- Learn to annotate schemas
- Learn to understand namespaces
- Learn to work with multiple XML schema documents
- Learn to use XPath to access XML elements and attributes
- Learn to loop through XML elements
- Learn to use conditionals in XSLT
- Learn to create and call templates
- Learn to work with multiple XSLTs
- Learn to reference external XML documents

Topics

- XML Basics
- DTDs
- Simple-Type Elements
- XSLT Basics
- XML Schema Basics
- Simple-Type Elements
- Complex-Type Elements
- Attributes
- Reusing Schema Components
- Annotating a Schema

- Namespaces
- XPath
- Flow Control in XSLT
- XSLT Templates, Parameters and Variables
- Multiple XML and XSLT Documents
- Working with Keys
- Advanced XSLT Techniques
- Tying It All Together

Audience

This course is designed for those who need to write XML documents and incorporate them into their Java-based applications.

Prerequisites

Experience in the following would be useful for this XML class: HTML

Duration

Five days

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Course Outline

I. *XML Basics*
- A. What is XML?
- B. XML Benefits
  1. XML Holds Data, Nothing More
  2. XML Separates Structure from Formatting
  3. XML Promotes Data Sharing
  4. XML is Human-Readable
  5. XML is Free
- C. XML in Practice
  1. Content Management
  2. Web Services
  3. RDF / RSS Feeds
- D. XML Documents
  1. The Prolog
  2. Elements
  3. Attributes
  4. CDATA
  5. Whitespace
  6. XML Syntax Rules
  7. Special Characters
- E. Creating a Simple XML File

II. *DTDs*
- A. Well-formed vs. Valid
- B. The Purpose of DTDs
- C. Creating DTDs
  1. The Document Element
  2. Other Elements
  3. Choice of Elements
  4. Empty Elements
  5. Mixed Content
  6. Location of Modifier
  7. Using Parentheses for Complex Declarations
  8. Declaring Attributes
- D. Validating an XML Document with a DTD

III. *XML Schema Basics*
- A. The Purpose of XML Schema
- B. The Power of XML Schema
- C. A First Look
  1. A Simple XML Schema
- D. Validating an XML Instance Document

IV. *Simple-Type Elements*
- A. Overview
- B. Built-in Simple Types
  1. 19 Primitive Data Types
  2. Built-in Derived Data Types
  3. Defining a Simple-type Element
- C. User-derived Simple Types
  1. Applying Facets
  2. Controlling Length
  3. Specifying Patterns
  4. Working with Numbers
  5. Enumerations
  6. Whitespace-handling
- D. Specifying Element Type Locally
- E. Nonatomic Types
  1. Lists
  2. Unions
- F. Declaring Global Simple-Type Elements
  1. Global vs. Local Simple-Type Elements
- G. Default Values
- H. Fixed Values
- I. Nil Values

V. *XSLT Basics*
- A. eXtensible Stylesheet Language
- B. An XSLT Stylesheet
  1. xsl:template
  2. xsl:value-of
  3. Whitespace and xsl:text
- C. Output Types
  1. Text
  2. XML
  3. HTML
- D. Elements and Attributes
  1. xsl:element
  2. xsl:attribute
  3. Attributes and Curly Brackets

VI. *XML Schema Basics*
- A. The Purpose of XML Schema
- B. The Power of XML Schema
- C. A First Look
  1. A Simple XML Schema
- D. Validating an XML Instance Document

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Course Outline (cont'd)

XV. XPath
    A.   XPath in XSLT
    B.   XPath Expression
    C.   XPath Terminology
    D.   Context Node
        1.   Current Node
        2.   Context Size
        3.   Proximity Position
    E.   Location Paths
    F.   Axis
    G.   Node Test
    H.   Predicate
    I.   Accessing Nodes
    J.   Abbreviated Syntax
    K.   XPath Functions
    L.   XPath Operators

XVI. Flow Control in XSLT
    A.   Looping in XSLT
    B.   Sorting with XSLT
    C.   Looping and Sorting
    D.   Conditions with XSLT

XVII. XSLT Templates, Parameters and Variables
    A.   xsl:apply-templates
    B.   xsl:call-template
    C.   Passing Parameters
    D.   Removing Content
    E.   Template Modes
    F.   Template Priority
        1.   Default Priorities
        2.   Assigning Priorities
    G.   XSLT Variables

XVIII. Multiple XML and XSLT Documents
    A.   Including XSLTs
    B.   Importing XSLTs
    C.   Conflict resolution
    D.   The document() Function

XIX. Working with Keys
    A.   Key Basics
        1.   <xsl:key/>
        2.   The key() Function
        3.   Improving Performance with Keys
        4.   Cross References
        5.   The Key Way
        6.   Grouping
        7.   The generate-id() Function
        8.   Using generate-id() for Grouping

XX. Advanced XSLT Techniques
    A.   Working with Numbered Lists
        1.   The position() function
        2.   xsl:number
    B.   Outputting Processing Instructions
    C.   Copying Nodes
        1.   xsl:copy
        2.   xsl:copy-of

XXI. Tying It All Together
    A.   Workshop: Sharing data and transforming it for the Web