Comprehensive XML Training Courseware (XML501)

Length: 5 days

This extensive XML training program is designed to equip students with the skills necessary to master the intricacies of XML, a foundational technology in the realm of data representation and exchange. Starting with the basics, the course guides learners through the process of creating well-formed XML documents, ensuring that they grasp the essential principles of XML syntax and structure.

Once the students have a solid understanding of XML syntax, the course moves into XML Schema, providing students with the tools and knowledge to define the structure, content, and semantics of XML documents for robust validation purposes

Finally, students will learn to design and implement extensible Stylesheets (XSLs), empowering them to transform XML documents into XHTML and other XML structures seamlessly. This skill is particularly valuable for web development, allowing for the dynamic presentation of XML data across different platforms and devices.

By the end of this course, participants will have gained a comprehensive understanding of XML, from document creation and validation to transformation, making them proficient in utilizing XML to solve a wide range of data representation and processing challenges.

Benefits

1. Learn the basics of XML - a skill that can be applied across many programming languages.
2. Learn to build XML Schema to validate XML documents.
3. Learn to write XSLTs to transform XML documents into any arbitrary format.

Outline

1. **XML Basics**
    A. What is XML?
    B. XML Benefits
    C. XML in Practice
    D. XML Documents
    E. A Simple XML File
    F. Editing an XML File (exercise)
    G. Recognizing XML (exercise)
2. **DTDs**
    A. Well-formed vs. Valid
    B. The Purpose of DTDs
    C. Creating DTDs
    D. Validating an XML Document with a DTD
    E. Writing a DTD (exercise)
3. **XML Schema Basics**
    A. The Purpose of XML Schema
    B. The Power of XML Schema
    C. A First Look
    D. Validating an XML Instance Document
4. **Simple-Type Elements**
    A. Overview

B. Built-in Simple Types
C. Building a Simple Schema (exercise)
D. User-derived Simple Types
E. Restricting Element Content (exercise)
F. Specifying Element Type Locally
G. Nonatomic Types
H. Adding Nonatomic Types (exercise)
I. Declaring Global Simple-Type Elements
J. Converting Simple-Type Element Declarations from Local to Global (exercise)
K. Default Values
L. Fixed Values
M. Nil Values

5. Complex-Type Elements

A. Overview
B. Content Models
C. Complex Model Groups
D. Occurrence Constraints
E. Adding Complex-Type Elements (exercise)
F. Declaring Global Complex-Type Elements
G. Converting Complex-Type Elements from Local to Global (exercise)
H. Mixed Content
I. Defining Complex Types Globally

6. Attributes

A. Empty Elements
B. Adding Attributes to Elements with Complex Content
C. Adding Attributes to Elements with Simple Content
D. Restricting Attribute Values
E. Default and Fixed Values
F. Requiring Attributes
G. Adding Attributes to Elements (exercise)

7. Reusing Schema Components

A. Overview
B. Groups
C. Extending Complex Types

8. Tying It All Together - XSD

A. Tying it all Together
B. Tying It All Together (exercise)

9. Annotating XML Schemas

A. Overview
B. Annotating a Schema
C. Annotating an XML Schema (exercise)

10. Namespaces

A. Overview
B. Purpose of Namespaces
C. Target Namespaces
D. Default Namespaces
E. Locally Declared Elements and Attributes
F. Qualified Locals
G. The XMLSchema-instance Namespace
H. Using Multiple Namespaces

11. XSLT Basics
- A. eXtensible Stylesheet Language
- B. The Transformation Process
- C. Performing the Transform
- D. An XSLT Stylesheet
- E. Whitespace
- F. Output Types
- G. Elements and Attributes

12. XPath
- A. XPath in XSLT
- B. XPath Expression
- C. Path Expressions
- D. Node Test
- E. Axis
- F. Predicate
- G. Accessing Nodes (exercise)
- H. Abbreviated Syntax
- I. Accessing Nodes with Abbreviated Syntax (exercise)
- J. Understanding the Enhanced Data Model in XPath 2.0 and Beyond
- K. XPath Functions
- L. XPath Operators
- M. Using XPath Functions and Operators (exercise)

13. Flow Control
- A. Looping in XSLT
- B. Looping with xsl:for-each (exercise)
- C. Sorting with XSLT
- D. Looping and Sorting (exercise)
- E. Conditions with XSLT
- F. Conditionals (exercise)

14. Templates, Parameters, and Variables
- A. xsl:apply-templates
- B. Using xsl:apply-templates (exercise)
- C. xsl:call-template
- D. Passing Parameters
- E. Using xsl:call-template (exercise)
- F. Removing Content
- G. Template Modes
- H. Template Priority
- I. XSLT Variables

15. Multiple Documents
- A. Including XSLTs
- B. Importing XSLTs
- C. Conflict Resolution
- D. Multiple Input and Output Documents
- E. Reusing Templates (exercise)

16. Grouping and Keys
- A. Grouping
- B. Grouping Songs By Artist (exercise)
- C. Key Basics
- D. Creating a Simple Key (exercise)

E. Improving Performance with Keys
F. Improving Performance with Keys (exercise)

17. **Regular Expressions**
    A. Regular Expression Syntax
    B. Functions that Use Regular Expressions
    C. The xsl:analyze-string instruction
    D. Using xsl:analyze-string (exercise)
18. **User-defined Functions**
    A. User-Defined Functions
    B. User-Defined Functions (exercise)
19. **Advanced XSLT Techniques**
    A. Working with Namespaces
    B. Working with Numbered Lists
    C. Outputting Processing Instructions
    D. Copying Nodes
20. **Tying It All Together - XSLT**
    A. Transforming the Business Letter (exercise)

Required Prerequisites

None