



**DESCRIPTOR SYSTEMS**

"We Bring You Up To Speed"

## Introduction to XML

- Description** This course teaches students what XML is all about and how to create XML content.
- Audience** Content developers who will create XML documents and programmers that need background for attending an XML programming course.
- Prerequisites** Experience with the Web and HTML is strongly recommended.
- Length** 3 days
- Format** Instructor-led; lecture and hands-on lab exercises.

### *Topics*

- Introduction to the Course
- Introduction to XML
- Writing Well Formed XML
- XML Namespaces
- Introduction to XML Schema
- Schema Data Types
- Schemas and Namespaces
- Schema Design Patterns
- XPath Fundamentals
- XSLT Fundamentals
- XSLT, Part 2
- Optional: Validation using DTD

### **Detailed Topic List**

1. Introduction to the Course
  - Introduction to XML
  - Legal Information
  - Introduction to XML
  - Introductions
  - Course Description
  - Course Objectives
  - Sample Agenda
  - Sample Agenda, cont'd
  - Sample Agenda, cont'd
  - Course Logistics
  
2. Introduction to XML
  - Introduction to XML
  - Adding Markup to Text
  - History of Markup Languages
  - What is XML?
  - XML Version History
  - XML Design Goals
  - A Simple Example
  - Definition of Terms
  - Quiz
  - Processing XML
  - XML vs HTML
  - Applications of XML
  - XML For Publishing
  - XML On The Web
  - What is XHTML?
  - XML For Web Services
  - A Sample XML SOAP Document
  - XML For Configuration Files
  - XML As a Data File Format
  - Related Specifications
  - Chapter Summary
  
3. Writing Well Formed XML
  - Writing Well Formed XML
  - The XML Recommendation
  - Well Formedness vs Validity
  - Reading the Recommendation
  - Simple Syntax Rules for Well Formedness
  - Character Encoding
  - What is Unicode?
  - Unicode Encoding Schemes
  - XML is Text
  - The XML Declaration
  - Is The XML Declaration Really Optional?
  - One Root Element to Rule Them All
  - Rules for Names
  - All Tags Must Close
  - Writing Empty Elements
  - Thou Shall Nest Properly
  - XML as a Tree Structure
  - Quote Your Attributes
  - Attributes vs Child Elements

- A Case For Sensitivity
  - Well Formedness Quiz
  - Try It Now!
  - Parsed Character Data
  - Mixed Content
  - Special Characters
  - The CDATA Section
  - XML Comments
  - Processing Instructions
  - Try It Now!
  - Chapter Summary
4. XML Namespaces
- XML Namespaces
  - Name Ambiguity
  - One Solution
  - Introduction to XML Namespaces
  - Namespace Syntax
  - The Namespace Myth
  - Using Multiple Namespaces
  - Using a Default Namespace
  - Elements With No Namespace
  - Namespaces and Attributes
  - Try It Now!
  - Namespaces and Parsers
  - Issues With Namespaces
  - Namespace Quiz
  - Chapter Summary
5. Introduction to XML Schema
- Introduction to XML Schema
  - Validating XML
  - Introducing XML Schema
  - A Simple Schema
  - Referencing a Schema
  - Global vs Local Scope
  - Simple Types vs Complex Types
  - Predefined Simple Types
  - Defining Complex Types
  - Reusing Global Complex Types
  - Compositors
  - Defining Elements
  - Referencing Elements
  - Element Occurrence Constraints
  - Defining Empty Elements
  - Defining Mixed Content Elements
  - Schema Quiz #1
  - Defining Attributes
  - Attribute Occurrence Constraints
  - Reusing Attribute Definitions
  - Schema Quiz #2
  - Chapter Summary
6. Schema Simple Data Types
- Schema Simple Data Types
  - Schema Data Types

- Data Type Terminology
  - Predefined Simple Data Types
  - String Primitive Types
  - String Primitive Types Examples
  - Encoded Binary Primitive Types
  - Encoded Binary Primitive Types Examples
  - Numeric Primitive Data Types
  - Numeric Primitive Data Types Examples
  - Date/Time Primitive Data Types
  - Date/Time Primitive Data Types Examples
  - Date/Time Examples cont'd
  - String Derived Types
  - String Derived Types, Examples
  - String Derived Types, Examples, cont'd
  - String Derived Types, Examples, cont'd
  - String Derived Types, Examples, cont'd
  - Decimal Derived Types
  - Data Types Quiz #1
  - Deriving New Simple Data Types
  - What Are Facets?
  - The Fundamental Facets
  - Constraining Facets
  - Using the Length Facets
  - Using the Length Facets, cont'd
  - Using the Enumeration Facet
  - Using the Min/Max Facets
  - Using the Min/Max Facets, cont'd
  - Introduction to Regular Expressions
  - Basic Regex Concepts
  - Matching Literal Characters
  - Meta Characters
  - Character Classes
  - Single Character Wildcard
  - Repetition: Matching Multiple Characters
  - Anchors: Matching at Start or End
  - Alternation
  - Using the Pattern Facet
  - Data Types Quiz #2
  - Chapter Summary
7. Schemas and Namespaces
- Schemas and Namespaces
  - Namespace Review
  - Namespace Review, cont'd
  - The Schema Namespaces
  - Referencing Schemas from an Instance Document
  - xsi:schemaLocation Syntax
  - xsi:schemaLocation Example
  - The targetNamespace Attribute
  - Global and Local Elements in a Schema
  - Global vs Local Definitions
  - Namespace Example #1
  - The form Attribute
  - elementFormDefault and attributeFormDefault
  - Namespace Example #2
  - Chapter Summary

## 8. Schema Design Patterns

- Schema Design Patterns
- Schema Design Patterns
- Russian Doll Design
- Russian Doll Design Example
- Russian Doll Tradeoffs
- Salami Slice Design
- Salami Slice Design Example
- Salami Slice Tradeoffs
- Venetian Blind Design
- Venetian Blind Design Example
- Venetian Blind Tradeoffs
- Chapter Summary

## 9. XPath Fundamentals

- XPath Fundamentals
- What is XPath?
- Why Learn XPath?
- XML as a Tree Structure
- Introduction to XPath Syntax
- Basic XPath Syntax
- Basic Syntax Example
- Quiz #1
- Node Tests
- The Context Node and Relative XPaths
- Relative XPaths Example
- Quiz #2
- XPath Axes
- Abbreviated Syntax
- Using Abbreviated Syntax
- Predicates
- Predicates That Evaluate to a Number
- XPath Node Functions
- The name() Function
- The text() Node Test
- XPath Positional Functions
- The position() Function
- The last() Function
- The count() Function
- XPath Numeric Functions
- The number() Function
- The sum() Function
- XPath String Functions
- The string-length() Function
- The contains() Function
- The substring() Function
- The translate() Function
- XPath 2.0 Overview
- Chapter Summary

## 10. Introduction to XSLT

- Introduction to XSLT
- What is XSL?
- What is XSLT?
- What Can You Do with XSLT?

- XSLT Processors
- XML As A Tree Structure
- XSLT Processing Model
- The Simplest XSLT Stylesheet
- Output of the Simplest Stylesheet
- Built-In Rules
- Overriding a Built-In Rule
- Output of Overriding a Built-In Rule
- apply-templates: Processing Child Nodes
- Output of Processing Child Nodes
- Selectively Processing Child Nodes
- Output of Selective Processing
- More on Selective Processing
- Output of More Selective Processing
- Emitting Source-Tree Text
- Output of Emitting Source-Tree Text
- Using XSLT in Web Applications
- Transforming XML On the Server
- Transforming XML on the Client
- Specifying a Stylesheet in XML
- Selectively Applying XSLT
- Chapter Summary

#### 11. XSLT, Part 2

- XSLT, Part 2
- XSLT Programming Elements
- The `xsl:if` Element
- The `xsl:choose` Element
- The `xsl:for-each` Element
- XSLT Variables
- Variables Example
- Another Variables Example
- Named Templates
- Named Template Example
- Named Template Parameters
- Generating XML Output
- Elements That Explicitly Generate XML
- Translating XML to Another Vocabulary
- Translating XML, cont'd
- Translating XML, cont'd
- Attribute Value Templates
- Attribute Value Template Example
- Controlling Output Format
- HTML Output Example
- Whitespace Processing
- The `xsl:text` Element
- Whitespace Example
- The `xsl:sort` Element
- The `xsl:number` Element
- Chapter Summary

#### 12. Validating XML With DTD

- Validating XML With DTD
- Well Formedness vs Validity
- DTD vs XML Schema
- XML Processing

- Writing an Internal DTD
- Writing an External DTD
- Using Both Internal and External
- Defining an Element
- Content Model: PCDATA
- Content Model: Child Elements
- Content Model: Child Elements, cont'd
- Content Model: Child Elements, cont'd
- Content Model: Mixed
- Content Model: Empty
- Content Model: Any
- DTD Content Model Quiz
- Defining Attributes
- Constraining Attribute Values
- CDATA Attributes
- NMTOKEN Attributes
- ID and IDREF Attributes
- Enumerated Attributes
- Required Attributes
- Implied and Default Attributes
- Fixed Attributes
- DTD Attribute Quiz
- Defining Internal General Entities
- Defining External General Entities
- Defining Parameter Entities
- Chapter Summary