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501. Introduction to XML

Version 1.1.1

This one-day course introduces the eXtensible Markup Language, or XML, including basic grammar and XML validation using DTDs or XML Schema. Students learn to read and to hand-write XML well-formed XML documents, and then proceed to modeling concepts, first learning the basic DTD language and then studying namespaces and XML Schema. The course closes with a chapter on important XML-related technology, including XPath, XSLT, SAX or DOM parsing, and SOAP-based Web services.

The module presents what might be called "Pure XML" -- by which we mean two things. Firstly, everything in the module is based strictly on W3C specifications, without any vendor-specific extensions. Secondly, no knowledge of any particular programming language or other external technology is required to participate fully in the module. Thus the hands-on exercises, and the knowledge that is developed, are portable and applicable to any XML authoring or development effort.

Prerequisites

- None. Some familiarity with HTML will be beneficial.



Learning Objectives

- Understand the broad influence of XML on emerging software architectures.
- Write well-formed XML documents to express simple or complex document content.
- Write DTDs to set rules for XML document validation.
- Write valid XML documents with internal and/or external document type definitions.
- Understand the limitations of DTDs in expressing document and object designs and in setting strict validation rules.
- Read and write XML using namespaces to import type information and to partition the XML namespace.
- Use XML Schema to validate XML documents.
- Understand the roles of XPath, XSLT, parsing, and Web services in the broader scope of XML technology in software applications.

Timeline: 1 days.





Chapter 1. A Brief History of XML

- Birth of XML
- Content vs. Presentation
- Self-Describing Data
- A Standard Document Format
- Uses for XML

Chapter 2. XML Grammar

- Structure of an XML Document
- Handling Whitespace
- Character and Entity References
- Well-Formed XML
- Elements
- Attributes
- Processing Instructions
- Comments
- CDATA Sections

Chapter 3. Valid XML

- Document Types
- DTD Structure
- Defining Elements
- Cardinality
- Attributes
- Required, Implied, Default, and Fixed Attributes
- Enumerations
- XML Namespaces
- Limitations of DTDs
- XML Schema
- Advantages of XML Schema
- Data Types

Chapter 4. Using XML in Applications

- SAX and DOM Parsing
- XSLT
- XPath
- XSL-FO
- Web Services
- SOAP





Appendix A. Learning Resources

System Requirements

Hardware Requirements (Minimum)

500 MHz, 128 meg RAM, 50 meg disk space.

Hardware Requirements (Recommended)

1.0 GHz, 256 meg RAM, 50 meg disk space.

Operating System

Tested on Windows 2000 Professional. Course software should be viable on all systems which support W3C-compliant XML tools.

Network and Security

Limited privileges required -- please see our standard security requirements at <http://capcourse.com/Guides/Security.html>.

Software Requirements

All free downloadable tools.

