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## XML and Java Application Development

Duration: 4 days

**Gain extensive experience using Java to create and process XML documents. Use Java to build a working prototype of an application that can format, exchange and control XML.**

### Course Description:

In this course you learn to use XML's object-oriented modules to access databases in standalone and Web-based applications on UNIX/Linux and Windows. You learn to create dynamic Web pages, incorporating data from databases, and build an e-commerce system.

### Participants will learn to...

- Leverage the power of Java and XML to build enterprise applications
- Create well-formed and valid XML documents
- Parse XML using DOM and Java
- Process XML sequentially with the event-driven SAX
- Generate and modify XML documents programmatically with DOM and JDBC
- Exploit JDOM as an alternative to SAX & DOM
- Style XML with XSLT for presentation or data transformation

### Who Needs to Attend:

Anyone who needs to exchange data over the Internet, including programmers, Web developers, project analysts, project managers, and software engineers.

### Prerequisites:

Java programming experience is required.

### Course Content:

#### SECTION 1 – OVERVIEW OF XML TECHNOLOGIES

##### XML in the enterprise

- The benefits of pairing Java and XML
- Styling for B2B transformation and B2C presentation

##### The well-formed XML document

- The document root and prolog
- Syntax
- Namespaces
- Content
- Elements
- Attributes
- Entities

##### Parsing fundamentals

- Document Object Model (DOM)
- Simple API for XML (SAX)

#### SECTION 2 - EXCHANGING AND VALIDATING DATA

##### Designing XML enterprise applications

- Data modeling with XML
- B2B/B2C object modeling for Java
- Enforcing validation in data exchange

##### Writing Document Type Definitions (DTDs)

- Embedding business rules into DTDs
- DTD syntax and components
- Validating elements and attributes

##### XML Schemas

- Limitations of DTDs
- Writing XML to validate XML
- Using DBM files for fast key/value lookup
- Examining Perl's different DBM modules
- Mapping DBM file data onto hashes
- Solving file-locking issues with DBM file

#### SECTION 3 - SEQUENTIAL JAVA PARSING OF XML WITH SAX

##### The SAX architecture

- Choosing the right SAX parser
- Loading the reader and parsing the document
- Interpreting SAX events

##### Java SAX event handlers

- Retrieving data through the ContentHandler
- Locating document problems with the ErrorHandler
- Resolving external entities with the EntityResolver
- Using the DTDHandler to process notations

##### SAX validation

- Configuring SAX parser features
- Handling validation exceptions

#### DOM PARSING WITH JAVA

##### DOM syntax for Java

- Fitting DOM into XML
- Extracting data through the DOM tree view
- Working with DOM nodes
- Processing DOM data

##### Validating DOM

- Determining when to use validation
- Enabling validation in the parser
- Handling DOM exceptions

##### Constructing Java objects with DOM

- Mapping XML data into Java
- Building a user-friendly GUI from DOM

#### SECTION 4 - GENERATING AND UPDATING XML WITH DOM

##### Extracting data with Java Database

##### Connectivity (JDBC)

- Establishing the database connection
- Querying and modifying a database with SQL

##### Modifying DOM data

- Identifying specific nodes
- Restructuring the document tree

##### Building XML documents from scratch

- Generating XML from a JDBC ResultSet
- Creating element and text nodes
- Outputting a document using a Serializer

#### JDOM: THE ALTERNATIVE TO DOM AND SAX

##### Abstracting DOM and SAX with JAXP

- Avoiding proprietary parser APIs

##### Transitioning to JDOM

##### Java-optimized XML parsing with JDOM

- Creating a JDOM Document with SAXBuilder and DOMBuilder
- Modifying elements and attributes
- Building XML on the fly
- Outputting a document using an XML Outputter

#### SECTION 5 - DATABASE INTEGRATION WITH CGI SCRIPTS

##### Linking databases to CGI scripts

Accessing databases from within

- your CGI script
- Separating design from implementation
- Importing design templates

##### Handling images

- Writing Web pages that call other CGI scripts
- Retrieving graphics from a database
- Delivering image content

##### Producing on-the-fly graphics

- Processing retrieved data
- Converting data to graphical form using Perl graphics modules
- Sending dynamically created graphics to the user

#### SECTION 6 - TRANSFORMING DATA WITH XSLT

- Working with XSL templates
- Formatting XML for the browser and hand-held devices

### Course Labs:

One lab for each section