# XML Fundamentals Ed 1.1

JAVA

| DURATION | MODULES | COURSE CODE |
| --- | --- | --- |
| **2 Days** | **9 Lectures** | **—** |

## Course Overview

XML Fundamentals Ed 1.1

## What You Will Learn

- Preface

### Introduction

- Objectives
- Course Goals
- Suggested Course Agenda
- Questions About You
- Database Schemas Used in This Course
- Human Resources (hr) Schema
- Order Entry (oe) Schema
- purchaseorder.xsd Purchase Order XML Schema Used in the XML DB Course
- Appendixes
- Class Account Information
- Course Environment
- Entering SQL Statements by Using Oracle SQL*Plus in a Terminal Window
- Using Oracle JDeveloper
- Entering SQL Statements and Coding PL/SQL by Using Oracle SQL
- Developer
- Related Oracle University Courses: education.oracle.com
- Additional Information
- Oracle Database 12c Release 1 (12.1) Documentation
- Additional Resources: Using “Oracle by Example” (OBE) in the Online
- Learning Library
- Additional Resources: Oracle Learning Library (OLL)
- Oracle XML DB Home Page: http://www.oracle.com/technetwork/

- database-features/xmldb/overview/index.html
- Oracle JDeveloper Home Page: http://www.oracle.com/technetwork/
- developer-tools/jdev/overview/index.html
- Additional Web Resources for XML
- Course Files in the /home/oracle/labs Folder
- JDeveloper Application and Projects in the labs Folder
- Course Environment and Data
- Practice 1-1: Overview
- Summary

## Introduction to XML

- Objectives
- Lesson Agenda
- Extensible Markup Language
- Advantages of Using XML
- XML Standards
- Document Object Model
- Simple API for XML
- Oracle XML Support
- XML in Oracle JDeveloper
- Building XML Applications with Oracle Technology
- XML in Service-Oriented Architecture
- Importance of XML in Web Services
- Creating an Application and Project in JDeveloper
- Creating an XML Document in JDeveloper
- Adding an XML Document to a Project
- Viewing the of an XML Document
- Viewing an XML Document in JDeveloper
- Quiz
- Practice 2-1: Overview
- Lesson Agenda
- Extensible Markup Language
- XML Documents Form a Tree Structure
- XML Document Structure
- Simple XML Document: Example
- XML Declaration
- Components of an XML Document
- XML Elements
- Empty Elements
- Markup Rules for Elements
- XML Attributes
- Naming Convention Rules for Elements and Attributes
- Using Elements Versus Attributes
- XML Entity
- XML Character Data (CDATA)

- XML Comments
- Well-Formed XML Documents
- Comparing XML and HTML
- Comparing XML and HTML: Example
- XML Development
- Creating an XML Document in JDeveloper
- Editing XML Documents in Oracle JDeveloper
- Setting Preferences in Oracle JDeveloper
- Quiz
- Summary
- Practice 2-2: Overview

## Validating XML Documents with Document Type Definitions

- Objectives
- Lesson Agenda
- What Is a Document Type Definition?
- Reasons to Validate an XML Document
- General DTD Rules
- Syntax for DTD Declarations
- Example of a Simple DTD Declaration and an XML Document That
- Conforms to the DTD
- Example of an XML Document That Does Not Conform to the DTD
- Reference the DTD in the XML Document
- Lesson Agenda
- Empty Element Declaration
- Child Elements Declaration
- Mixed Elements Declarations
- Any Element Declarations
- Specifying the Cardinality of Elements
- Specifying the Cardinality of Elements: Examples
- Attribute Declarations: Syntax and Requirements
- CDATA and Enumerated Attribute Types
- NOTATION Declaration and Attribute Type
- Specifying Default Attribute Values
- Entities in XML
- General Entity Declarations
- Parameter Entities
- Complete DTD: Example
- Lesson Agenda
- Validating XML Against a DTD
- Using XML Catalogs
- Benefits of Using XML Catalogs
- Quiz
- Summary
- Practice 3: Overview

## Modularizing XML with Namespaces

- Objectives
- What Is an XML Namespace?
- Benefits of Using XML Namespaces
- Declaring XML Namespaces
- XML Namespace Prefixes
- XML Namespace Declarations: Example
- Scope of XML Namespace Declarations
- ShowXMLns Tool
- Invoking the ShowXMLns Tool
- Quiz
- Summary
- Practice 4: Overview

## Validating XML Documents with XML Schemas

- Objectives
- Lesson Agenda
- What Is an XML Schema?
- W3C XML Schema Recommendation: Overview
- Benefits of XML Schemas
- XML Schema Versus DTD
- XML Schema Document: Example
- Validating an XML Document with an XML Schema Document
- Referencing an XML Schema with the schemaLocation Attribute
- Quiz
- Lesson Agenda
- Components of an XML Schema
- XML Schema Components: Example
- <schema> Declaration
- Global and Local Declarations
- Referencing Global Type Declarations Within the Content Model
- An XML Instance Document That Conforms to the Preceding XML Schema:
- Example
- Declaring an Element
- Built-In XML Schema Data Types
- Lesson Agenda
- Declaring a <simpleType> Component
- Using the <enumeration> Facet
- Using <list> and <union> simpleType Declarations
- Lesson Agenda
- Declaring a <complexType> Component
- Declaring a <sequence>
- Declaring a <choice>
- Declaring an Empty Element

- Using Element Wildcards
- Lesson Agenda
- Declaring Attributes
- Attribute Declarations: Example
- Declaring and Referencing an <attributeGroup>
- Documenting the XML Schema
- Practice 5-1: Overview
- Lesson Agenda
- Creating an XML Schema Document in JDeveloper
- Using the JDeveloper XML Schema Editor
- Using the JDeveloper XML Schema–Aware XML Editor
- Registering an XML Schema with JDeveloper
- Creating an XML Document from an XML Schema
- Using the XML Schema–Aware XML Editor
- Lesson Agenda
- Validating an XML Document with Its XML Schema in JDeveloper
- Validating an XML Document with its XML Schema with the oraxml Java Utility
- Applications for XML Schema
- Converting a DTD to an XML Schema
- Quiz
- Summary
- Practice 5-2: Overview

## Navigating XML Documents with XPath

- Objectives
- Lesson Agenda
- What Is XML Path Language?
- XPath 1.0 and XPath 2.0
- XPath Terminology: Node Types
- XPath Terminology: Family Relationships
- XPath Model
- Lesson Agenda
- XPath Expressions
- Location Path Expression
- Location Path Expression: Example
- Results of Location Path Expressions
- Results of Location Path Expressions: Examples
- Location Steps in XPath Expressions
- XPath Axes
- XPath Node Test Types
- Selecting Nodes by Using Abbreviated XPath Expressions
- Selecting Nodes by Using Abbreviated XPath Expressions: Examples
- Abbreviated and Unabbreviated XPath Expressions
- Abbreviated XPath Expression Examples: employees.xml Document
- Selecting Nodes by Using Abbreviated XPath Expressions: Examples

- Abbreviated XPath Expression Examples: departments.xml Document
- XPath Predicates
- Operators in XPath Expressions in Precedence Order
- Lesson Agenda
- XPath Functions
- Boolean Functions
- Number Functions
- Node-Set Functions
- String Functions
- XSLT and XPath
- Lesson Agenda
- Testing XPath Expressions
- XPath 2.0
- Quiz
- Summary
- Practice 6: Overview

## Transforming XML Documents with XSL Transformations

- Objectives
- Lesson Agenda
- What Is XSL?
- XSL Transformations
- XSLT Style Sheet
- XSLT Style Sheet: Example
- Using an XSLT Style Sheet with an XML Document
- Viewing the Transformed XML Document
- Creating an XSL File in JDeveloper
- Lesson Agenda
- Creating Template Rules
- Obtaining Input Text with <xsl:value-of>
- Applying Template Rules
- Controlling Template Activation Order
- Template Rules and Priorities
- Default Template Rules
- Effects of Default Template Rules
- Looping with <xsl:for-each>
- Specifying Output Formats
- Attribute Value Templates
- Creating Elements with Attributes
- Lesson Agenda
- Sorting an XML Document
- Conditional Processing with <xsl:if>
- Conditional Processing with <xsl:choose>
- Modes
- Example of Using Modes

- Calling Templates by Name
- Lesson Agenda
- Creating and Using Parameters
- Lesson Agenda
- Performing the XSLT Process in JDeveloper
- Using the oraxsl Utility
- XSLT 2.0
- Quiz
- Summary
- Practice 7: Overview

## Working with XQuery

- Objectives
- Lesson Agenda
- XQuery: Review
- XQuery Terminology
- What Is XQuery?
- Applications of XQuery
- Features of XQuery
- XQuery Terminology
- XQuery Data Model
- Conversion of XML into Query Data Model
- XQuery Syntax Rules
- Lesson Agenda
- XQuery Support in JDeveloper
- Lesson Agenda
- XQuery Expressions
- Primary Expressions: Variables
- Primary Expressions: Literals
- Primary Expressions: Constructors
- Sequence Expressions
- FLWOR Expressions
- FLWOR Expression Clauses
- departments.xml Document: Example
- Using FLWOR Expressions
- Path Expressions
- Using Path Expressions to Filter XML Data: Example
- Using Conditional Expressions
- Quantified Expressions
- Using Quantified Expressions
- Lesson Agenda
- XQuery Functions
- XQuery Operators
- XQuery Comparison and Boolean Operators
- Useful Websites About XML

- Useful W3C Websites About XQuery
- Quiz
- Summary
- Practice 8: Overview

## Introduction to Oracle XML DB

- Objectives
- Lesson Agenda
- What Is Oracle XML DB?
- Oracle XML DB
- Oracle XML DB: Benefits
- Implementing Oracle XML DB
- Lesson Agenda
- Oracle XML DB: Features
- Lesson Agenda
- XMLType: Overview
- Using XMLType
- XMLType Storage Models
- Lesson Agenda
- XML Schema Support in Oracle Database 12c
- XML Schema and Oracle XML DB
- XMLType and XML Schema
- XML Schema Management
- Storage and Access Infrastructure
- Validating XML
- Lesson Agenda
- Oracle XML DB Repository: Overview
- What Is the XML DB Repository?
- Mapping a Web Folder to Oracle XML DB Repository
- Mapping a Web Folder to the Oracle XML DB Repository
- Oracle XML DB Repository: Features
- Repository Support for Internet Protocols
- Oracle XML DB Versioning
- Lesson Agenda
- Benefits of Oracle XML DB
- XQuery Support in Oracle XML DB
- XQuery Support in Oracle Database
- Using XQuery with Oracle XML DB
- XMLQuery
- URI Scheme oradb: Querying Table or View Data with the XQuery fn:collection
- Function
- fn:collection Function: Example
- XMLTable
- XMLTable: Example
- Quiz
- Summary