

**Module 5:
Reading and Writing
XML with
ADO.NET**

Overview

- Creating XSD Schemas
- Loading Schemas and Data into DataSets
- Writing XML from a DataSet

Lesson: Creating XSD Schemas

- What Is an XSD Schema?
- What Are Typed DataSets?
- How XSD Schema Information Maps to Relational Structure
- Generating an XSD Schema with Visual Studio

What Is an XSD Schema?

- An XSD schema can contain:
 - A representation of relationships between data items
 - A representation of constraints
 - A specification of data types
- Use an XSD schema to:
 - Import data and know the structure of the data
 - Describe the structure of data you export
- Practice

What Are Typed DataSets?

- **Why build a typed DataSet?**
 - Save data and its definition for others to consume
 - Validate data in a document
 - Text format, operating-system agnostic
- **Ways to create a typed DataSet**

How XSD Information Maps to Relational Structure

How XSD information maps to relational structure

- ComplexTypes map to tables
- Nested ComplexTypes map to nested tables
- Key/Unique constraints map to UniqueConstraints
- KeyRef elements map to ForeignKeyConstraint

Generating an XSD Schema with Visual Studio .NET

- The Visual Studio .NET Schema Editor provides
 - Tag completion
 - Color coding
 - Ability to drag and drop standard XSD tags
- Infer a schema from an XML data file
- Practice

Lesson: Loading Schemas and Data into DataSets

- Loading a Schema into a DataSet
- Loading XSD Information from a File
- Examining Metadata
- Demonstration: Examining DataSet Structure
- Loading XML Data into a DataSet

Loading a Schema into a DataSet

- **Why load an XSD schema into a DataSet?**
 - To create a relational data structure in the DataSet
- **Ways to load schema information into a DataSet**
 - Use an XSD schema
 - Infer a schema from XML data
 - Manually create the structure of the DataSet by adding code to build tables and create relationships

Loading XSD Information from a File

- Use ReadXMLSchema to load an existing XSD schema into a DataSet
- Syntax of ReadXMLSchema

```
DataSet.ReadXMLSchema
```

```
(ByVal filename as string | stream as stream |  
  reader as textreader | reader as xmlreader)
```

Examining Metadata

- Why examine DataSet structure?
 - To understand the structure of tables and relationships in the DataSet
 - You can use this information to populate user interface controls and data displays
- How to get DataSet metadata

Demonstration: Examining DataSet Structure



In this demonstration, you will:

- Load an XSD schema into a DataSet
- Use the DataSet properties and methods to retrieve information about tables in the DataSet

Loading XML Data into a DataSet

- Use ReadXML to load data from a file or stream
- Simplified syntax

```
DataSet.ReadXML(Stream | FileName | TextReader  
| XMLReader, { ByVal mode as XMLReadMode })
```

- XMLReadMode specifies what to load
 - ReadSchema
 - IgnoreSchema
 - InferSchema
 - DiffGram
 - Fragment

Lesson: Writing XML from a DataSet

- Writing a Schema to a File, Reader, or Stream
- Writing DataSet Information to a File or Stream
- Demonstration: Writing an Inline Schema and Data to a File
- Writing DataSet Changes

Writing Schema to a File, Reader, or Stream

- Why write out schema information from a DataSet?
- Using the WriteXMLSchema method of the DataSet object
- Using the GetXML method of the DataSet object

Writing DataSet Information to a File or Stream

- Write data and schema information from a DataSet to a file or stream by using the WriteXML method
- Partial syntax of writing DataSet Information to a file or stream

```
Overloads Public Sub WriteXml (ByVal filename as  
String | stream as Stream | writer as XmlWriter |  
writer as TextWriter, {ByVal mode as  
XmlWriteMode})
```

- *XmlWriteMode* specifies what to persist
 - IgnoreSchema
 - WriteSchema
 - DiffGram

Demonstration: Writing Inline Schema and Data to a File



In this demonstration, you will

- Create a new DataSet object, tables, and columns
- Populate the DataSet with data
- Save the contents of the DataSet as an XML file with an inline schema

Writing DataSet Changes

- What is a DiffGram?

- A file or a stream in XML format that represents changes made to a DataSet

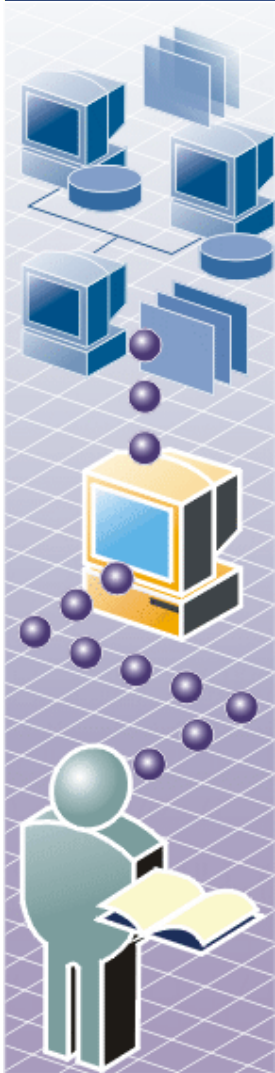
- Creating a DiffGram

- Set the **WriteXml** method of the DataSet object with the *XmlWriteMode* parameter set to **DiffGram**.

Review

- Creating XSD Schemas
- Loading Schemas and Data into DataSets
- Writing XML from a DataSet

Lab 5.1: Working with XML Data in ADO .NET



- Exercise 1: Generating a DataSet Schema by Using Visual Studio XML Designer
- Exercise 2: Creating and Loading a DataSet from XML
- Exercise 3: Saving DataSet Schemas and Data as XML

Course Evaluation

