

ADO.NET Using Visual C# 2005

Table of Contents

INTRODUCTION.....	INTRO-1
Prerequisites.....	INTRO-2
Installing the Practice Files	INTRO-3
Software Requirements	INTRO-3
The Chapter Files	INTRO-3
About the Authors	INTRO-4
ACCESSIONG DATA WITH ADO.NET.....	1-1
The ADO.NET Object Model	1-2
ODBC.....	1-2
DAO	1-2
RDO and ODBCDirect	1-2
ADO	1-2
ADO.NET	1-3
Connected and Disconnected Objects.....	1-5
Connecting to Data.....	1-10
Connection Strings.....	1-10
The Using Block.....	1-15
SQL Server Connections	1-15
Microsoft Access Connections.....	1-21
Understanding Connection Pooling	1-23
Closing Connections	1-24
Turning Off Connection Pooling.....	1-25
Managing the Pool with SqlCommand	1-25
Using SQL Profiler to Monitor the Pool.....	1-26
Using the Performance Monitor	1-28
Using Provider Statistics.....	1-30
LAB 1: ACCESSIONG DATA WITH ADO.NET.....	1-37
Lab 1 Overview.....	1-38
Creating OleDbConnection and SqlConnection Objects	1-39
Using a Connection String Builder.....	1-44
RETRIEVING DATA.....	2-1
Introducing Command Classes.....	2-2
Creating Command Objects.....	2-3

Table of Contents

Command Object Methods	2-7
Working with Data Readers	2-20
Retrieving Results Faster.....	2-20
Retrieving Multiple Result Sets	2-24
Retrieving Information about DataReader Schema	2-27
Using a Reader that Retrieves Data from a DataTable	2-30
Digging Deeper into Commands and DataReaders	2-34
Calling a Stored Procedure or Saved Query.....	2-34
Passing Parameters.....	2-36
Managing Multiple Namespaces with One Procedure	2-42
Calling a Stored Procedure with an Output Parameter.....	2-46
Binding DataReaders in ASP.NET.....	2-51
Filling the GridView Control	2-55
Hooking Up the Data.....	2-58
LAB 2: RETRIEVING DATA	2-63
Lab 2 Overview.....	2-64
Create a Windows Application.....	2-65
Create a Web Application	2-71
CACHING DATA IN DATASETS.....	3-1
DataSets and DataTables.....	3-2
DataSets Are Disconnected.....	3-2
DataTables.....	3-4
Populating a DataTable	3-6
Defining DataTable Columns	3-6
Adding Rows with the NewRow Method	3-6
Binding a DataGrid to a DataTable	3-7
Filling DataSets Using a DataAdapter	3-8
DataAdapter Command Objects	3-8
Filling a DataTable	3-9
Using the Load Method.....	3-13
Handling Multiple Result Sets	3-19
Retrieving Schema Information	3-25
DataColumns and Schema	3-25
DataSets and XML.....	3-31
Reading and Writing XML Data	3-31
LAB 3: CACHING DATA IN DATASETS	3-43
Lab 3 Overview.....	3-44

Fill with DataAdapter.....	3-45
Load with DataReader	3-48
Fill from XML.....	3-52
 APPLYING CONSTRAINTS.....	4-1
Primary Keys and Unique Constraints	4-2
Merging DataSets	4-11
Foreign Key Constraints	4-15
Referential Integrity.....	4-17
Column-Based Constraints.....	4-22
AllowDBNull	4-22
MaxLength	4-24
Default Values.....	4-25
 LAB 4: APPLYING CONSTRAINTS	4-31
Lab 4 Overview.....	4-32
Primary Key and Unique Constraints.....	4-33
Foreign Key Constraints	4-36
 DATA RELATIONS.....	5-1
Creating DataRelations.....	5-2
Creating Relationships in SQL Server	5-2
Relations in ADO.NET	5-3
The DataRelation Object.....	5-6
Navigation Pathways	5-12
GetChildRows	5-12
GetParentRow	5-17
Expressions and Relations	5-19
Aggregate Calculated Expressions.....	5-19
Lookup Expressions.....	5-22
Specifying XML Nesting.....	5-24
 LAB 5: DATA RELATIONS.....	5-31
Lab 5 Overview.....	5-32
Create DataRelations	5-33
Create Expressions	5-36
 UPDATING DATA	6-1
Creating Commands with CommandBuilders.....	6-2
Generating Commands.....	6-2

Updating Data Using a Command Builder	6-5
Creating Commands.....	6-8
Specifying Parameters.....	6-8
Updating with the DataAdapter	6-10
Understanding DataRowVersion and RowState	6-10
Using Stored Procedures.....	6-14
Advantages of Stored Procedures	6-14
Using Stored Procedures.....	6-15
The Insert Stored Procedure.....	6-16
The Delete Stored Procedure	6-16
Adding New Customers with Stored Procedures	6-17
Deleting Customers with Stored Procedures	6-19
Performing Batch Updates.....	6-23
Setting UpdateBatchSize	6-23
LAB 6: UPDATING DATA.....	6-29
Lab 6 Overview.....	6-30
Update Data with a Custom Command	6-31
View Modified Rows	6-35
USING STRONGLY TYPED DATASET CLASSES	7-1
Using a Loosely Typed DataSet	7-2
Creating a Strongly Typed DataSet.....	7-4
Investigating the Class.....	7-10
Use the Class View Window	7-11
Writing Some Simple Code	7-15
Using a Strongly Typed DataSet	7-18
Working with an Untyped DataSet	7-18
Working with a Typed DataSet	7-20
Using a TableAdapter	7-22
Finding a Row in a Typed DataSet	7-24
Editing a Row in a Typed DataSet.....	7-27
Adding a New Row to a Typed DataSet	7-29
Working with Null Values in a Typed DataSet	7-32
Navigating Relations in a Typed DataSet	7-34
Creating New TableAdapter Queries	7-37
Issues with Using a Strongly Typed DataSet.....	7-43
Strongly Typed DataSet and Data Binding	7-43
Comparing Typed and Untyped DataSet Efficiency.....	7-45

Converting Between Typed and Untyped DataSet Instances.....	7-48
Using Annotations to Control the Generation of a DataSet Class	7-52
Should You Use a Typed DataSet?	7-57
 LAB 7: USING STRONGLY TYPED DATASET CLASSES	7-63
Lab 7 Overview.....	7-64
Create a Strongly Typed DataSet.....	7-65
Hook Up Data Handling	7-68
 HANDLING EXCEPTIONS AND DATA ERRORS	8-1
Using Structured Exception Handling	8-2
The Exception Base Class.....	8-2
The Try/Catch Block	8-3
Unhandled Exceptions	8-7
Using the Exception Object.....	8-8
Handling Provider Errors	8-12
Using SQLException.....	8-12
Using InfoMessage	8-15
Dealing with Errors and InfoMessages	8-19
Using Transactions	8-21
Implicit Transactions	8-21
Explicit Transactions	8-21
Transaction Isolation Levels	8-21
The SqlTransaction Object	8-23
Handling Concurrency Conflicts	8-31
Optimistic Concurrency Issues	8-31
Update Criteria.....	8-31
Handling Data Updates with ADO.NET	8-34
 LAB 8: HANDLING EXCEPTIONS AND DATA ERRORS	8-49
Lab 8 Overview.....	8-50
Handle Multiple Errors	8-51
Create an Explicit Transaction.....	8-56
 SEARCHING, SORTING, AND FILTERING	9-1
The Sample Project	9-2
Data in the Sample Project	9-2
Displaying Results	9-4

Table of Contents

Working with DataTables.....	9-5
Searching Primary Key Values	9-5
Searching for Multiple Columns	9-6
Simple Dynamic Searches.....	9-7
Searching with Wildcards.....	9-9
Managing Delimiters	9-10
More Filtering Issues.....	9-13
Working with DataViews	9-17
Sorting Data Using a DataView	9-18
Filtering Data.....	9-19
Filtering on Row State.....	9-20
Iterating through Rows.....	9-24
Finding a Row	9-25
Finding Multiple Rows.....	9-27
Modifying Data in a DataView.....	9-29
Creating a DataTable from a DataView	9-32
 LAB 9: SEARCHING, SORTING, AND FILTERING.....	9-37
Lab 9 Overview.....	9-38
Allow Simple Wildcard Searches	9-39
Handle Delimiters within Strings	9-44
Display the Results in a DataGridView	9-47
 HANDLING AUTOINCREMENT COLUMNS.....	10-1
The AutoIncrement Property.....	10-2
AutoIncrement in a Typed DataSet.....	10-2
Retrieving New Database Values	10-6
Using Batched SQL Statements	10-6
Using the RowUpdated Event.....	10-8
Resetting the SQL Server Identity Seed	10-11
Avoiding Multiuser Conflicts.....	10-15
Understanding the Problem	10-15
Setting AutoIncrementSeed and AutoIncrementStep	10-17
Merging Inserted Rows.....	10-19
Understanding the Problem	10-19
Inspecting the Code	10-21
Solving the Merge Problem.....	10-23
Other Considerations	10-27
Handling Parent/Child Inserts	10-27
The Easy Way: Using GUIDs.....	10-27

LAB 10: HANDLING AUTOINCREMENT COLUMNS.....	10-33
Lab 10 Overview.....	10-34
Retrieve Autonumber Values from Access and Avoid Multiuser Conflicts	10-35
Merge New Rows Containing AutoIncrement Values.....	10-40
XML TECHNIQUES.....	11-1
ADO.NET and XML	11-2
Getting Started Reading and Writing XML.....	11-3
Working with XML Programmatically	11-7
Saving DataSet Data as XML.....	11-10
Using the GetXml Method.....	11-11
Controlling DataSet XML Output Options	11-12
Using the WriteXml Method	11-15
Writing XML Output as a DiffGram	11-21
Loading XML Data into a DataSet	11-27
The Ground Rules.....	11-27
Inferring a Schema.....	11-29
Using Internal Schema.....	11-30
Using External Schema	11-31
Reading a DiffGram	11-31
Loading a DataSet or DataTable from an XML String	11-34
Working with DataSets and XML Together.....	11-36
Using an XmlDocument.....	11-37
Format XML Data with XSLT	11-41
Query DataSet Data with XPath	11-45
Working with XML Data in SQL Server.....	11-50
Using XQuery to Query and Modify XML Data in SQL Server 2005	11-52
LAB 11: XML TECHNIQUES.....	11-71
Lab 11 Overview.....	11-72
Write a DataSet to an XML File	11-73
Use XSL to Create a Formatted Report.....	11-81
SUPPORTING SQL SERVER 2005 FEATURES.....	12-1
Optimizing Performance	12-2
Performing Asynchronous Processing.....	12-2
Using Bulk Copy to Load Data Quickly	12-9
Enhancing Concurrency with Snapshot Isolation.....	12-14

Table of Contents

Easing Application Development	12-23
Listing Available SQL Servers	12-23
Retrieving Multiple Active Result Sets (MARS)	12-24
Working with max Data Types	12-29
Using Query Notifications with ASP.NET Caching	12-34
 LAB 12: SUPPORTING SQL SERVER 2005 FEATURES.....	12-45
Lab 12 Overview.....	12-46
Asynchronous Processing	12-47
Work with max Data Types.....	12-51
 INDEX.....	INDEX-1