Working with Data in ASP.NET 2.0 :: Adding Additional DataTable Columns

Introduction

When adding a TableAdapter to a Typed DataSet, the corresponding DataTable's schema is determined by the TableAdapter's main query. For example, if the main query returns data fields *A*, *B*, and *C*, the DataTable will have three corresponding columns named *A*, *B*, and *C*. In addition to its main query, a TableAdapter can include additional queries that return, perhaps, a subset of the data based on some parameter. For instance, in addition to the `ProductsTableAdapter`'s main query, which returns information about all products, it also contains methods like `GetProductsByCategoryID(categoryID)` and `GetProductByProductID(productID)`, which return specific product information based on a supplied parameter.

The model of having the DataTable's schema reflect the TableAdapter's main query works well if all of the TableAdapter's methods return the same or fewer data fields than those specified in the main query. If a TableAdapter method needs to return additional data fields, then we should expand the DataTable's schema accordingly. In the Master/Detail Using a Bulleted List of Master Records with a Details DataList tutorial we added a method to the `CategoriesTableAdapter` that returned the `CategoryID`, `CategoryName`, and `Description` data fields defined in the main query plus `NumberOfProducts`, an additional data field that reported the number of products associated with each category. We manually added a new column to the `CategoriesDataTable` in order to capture the `NumberOfProducts` data field value from this new method.

As discussed in the Uploading Files tutorial, great care must be taken with TableAdapters that use ad-hoc SQL statements and have methods whose data fields do not precisely match the main query. If the TableAdapter Configuration wizard is re-run, it will update all of the TableAdapter's methods so that their data field list matches the main query. Consequently, any methods with customized column lists will revert to the main query's column list and not return the expected data. This issue does not arise when using stored procedures.

In this tutorial we will look at how to extend a DataTable's schema to include additional columns. Due to the brittleness of the TableAdapter when using ad-hoc SQL statements, in this tutorial we will use stored procedures. Refer to the Creating New Stored Procedures for the Typed DataSet's TableAdapters and Using Existing Stored Procedures for the Typed DataSet's TableAdapters tutorials for more information on configuring a TableAdapter to use stored procedures.

Step 1: Adding a `PriceQuartile` Column to the `ProductsDataTable`

In the *Creating New Stored Procedures for the Typed DataSet's TableAdapters* tutorial we created a Typed DataSet named `NorthwindWithSprocs`. This DataSet currently contains two DataTables: `ProductsDataTable` and `EmployeesDataTable`. The `ProductsTableAdapter` has the following three methods:

- `GetProducts` - the main query, which returns all records from the `Products` table
- `GetProductsByCategoryID(categoryID)` - returns all products with the specified *categoryID*.
- `GetProductByProductID(productID)` - returns the particular product with the specified *productID*.

The main query and the two additional methods all return the same set of data fields, namely all of the columns from the `Products` table. There are no correlated subqueries or `JOIN`s pulling related data from the `Categories` or `Suppliers` tables. Therefore, the `ProductsDataTable` has a corresponding column for each field in the `Products` table.

For this tutorial, let's add a method to the `ProductsTableAdapter` named `GetProductsWithPriceQuartile` that returns all of the products. In addition to the standard product data fields, `GetProductsWithPriceQuartile` will also include a `PriceQuartile` data field that indicates under which quartile the product's price falls. For example, those products whose prices are in the most expensive 25% will have a `PriceQuartile` value of 1, while those whose prices fall in the bottom 25% will have a value of 4. Before we worry about creating the stored procedure to return this information, however, we first need to update the `ProductsDataTable` to include a column to hold the `PriceQuartile` results when the `GetProductsWithPriceQuartile` method is used.

Open the `NorthwindWithSprocs` DataSet and right-click on the `ProductsDataTable`. Choose Add from the context-menu and then pick Column.

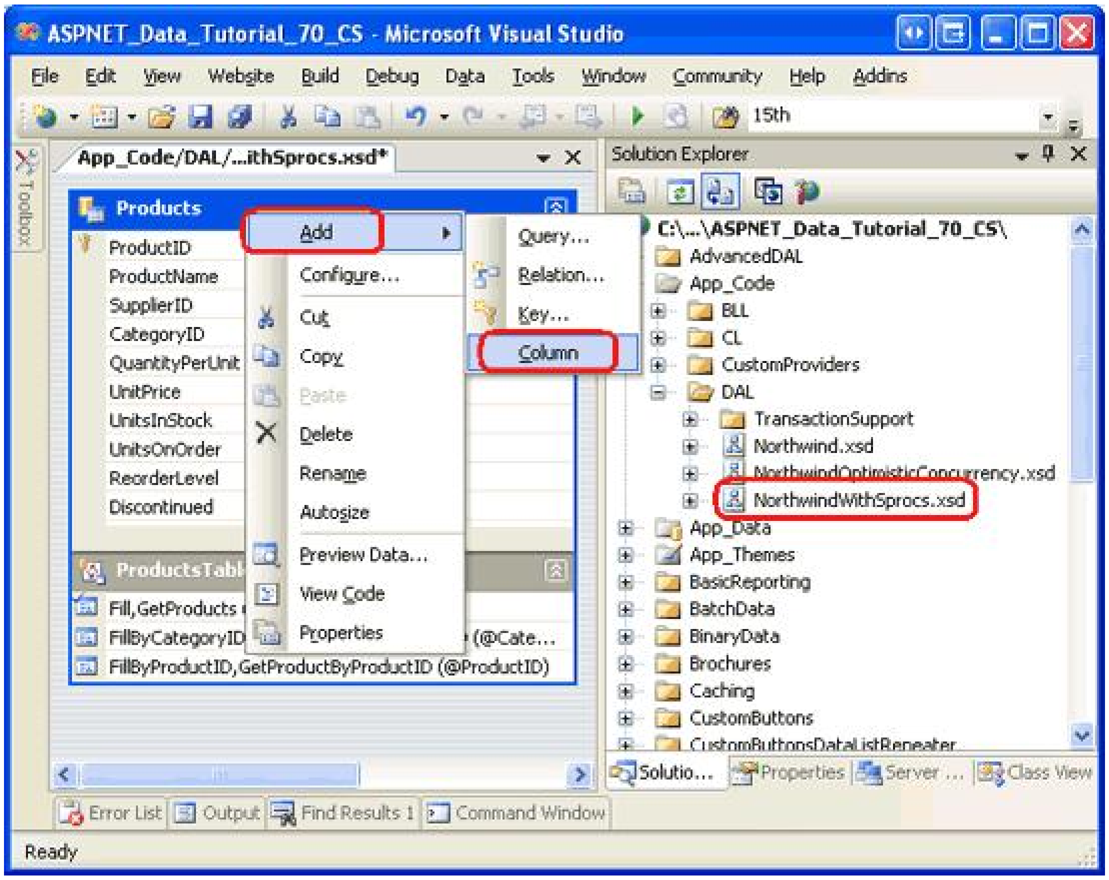
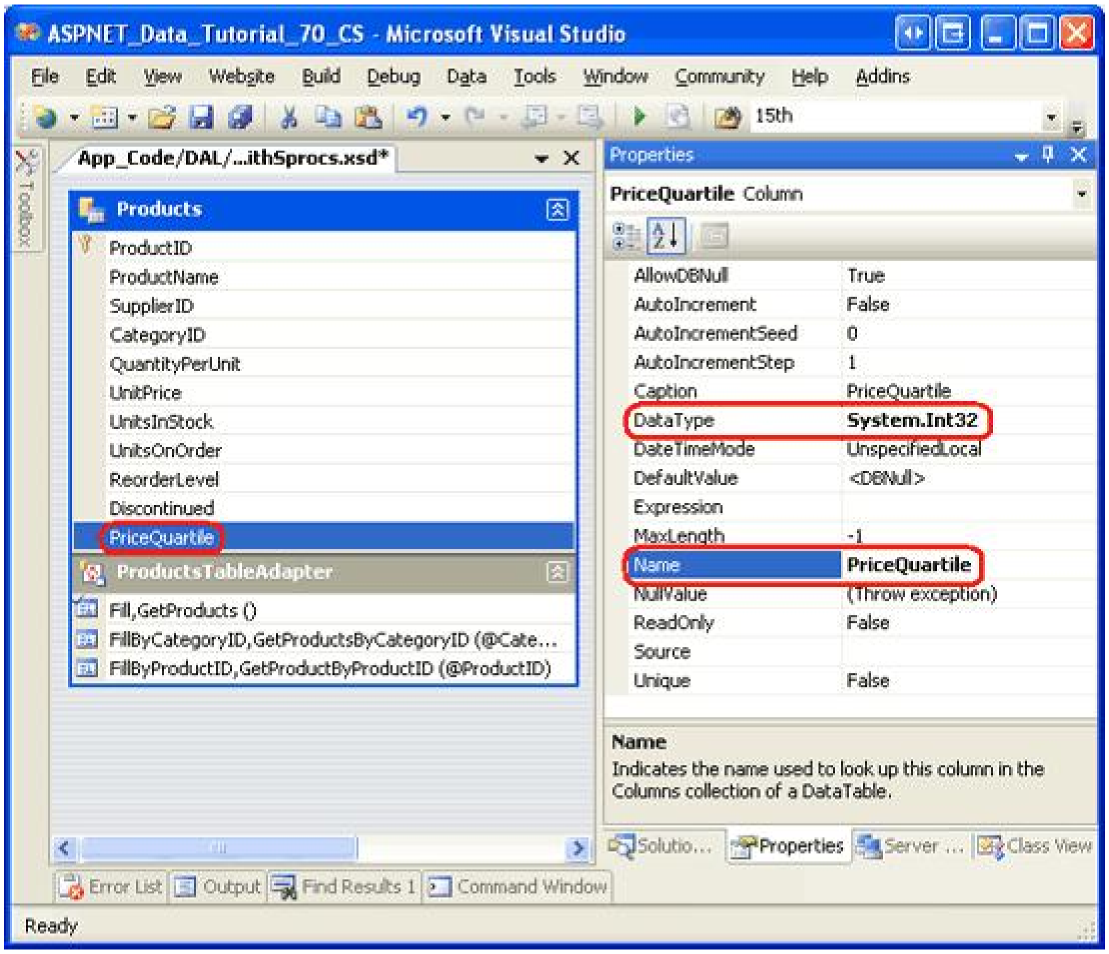


Figure 1: Add a New Column to the `ProductsDataTable`

This will add a new column to the DataTable named "Column1" of type `System.String`. We need to update this column's name to "PriceQuartile" and its type to `System.Int32` since it will be used to hold a number between 1 and 4. Select the newly-added column in the `ProductsDataTable` and, from the Properties window, set the `Name` property to "PriceQuartile" and the `DataType` property to `System.Int32`.


ASPNET_Data_Tutorial_70_CS - Microsoft Visual Studio
File Edit View Website Build Debug Data Tools Window Community Help Addins
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Error List Output Find Results 1 Command Window
Ready

Products
ProductID
ProductName
SupplierID
CategoryID
QuantityPerUnit
UnitPrice
UnitsInStock
UnitsOnOrder
ReorderLevel
Discontinued
PriceQuartile

ProductsTableAdapter
Fill,GetProducts ()
FillByCategoryID,GetProductsByCategoryID (@Cate...
FillByProductID,GetProductByProductID (@ProductID)

PriceQuartile Column

AllowDBNull	True
AutoIncrement	False
AutoIncrementSeed	0
AutoIncrementStep	1
Caption	PriceQuartile
DataType	**System.Int32**
DateTimeMode	UnspecifiedLocal
DefaultValue	<DBNull>
Expression	
MaxLength	-1
Name	**PriceQuartile**
NullValue	(Throw exception)
ReadOnly	False
Source	
Unique	False

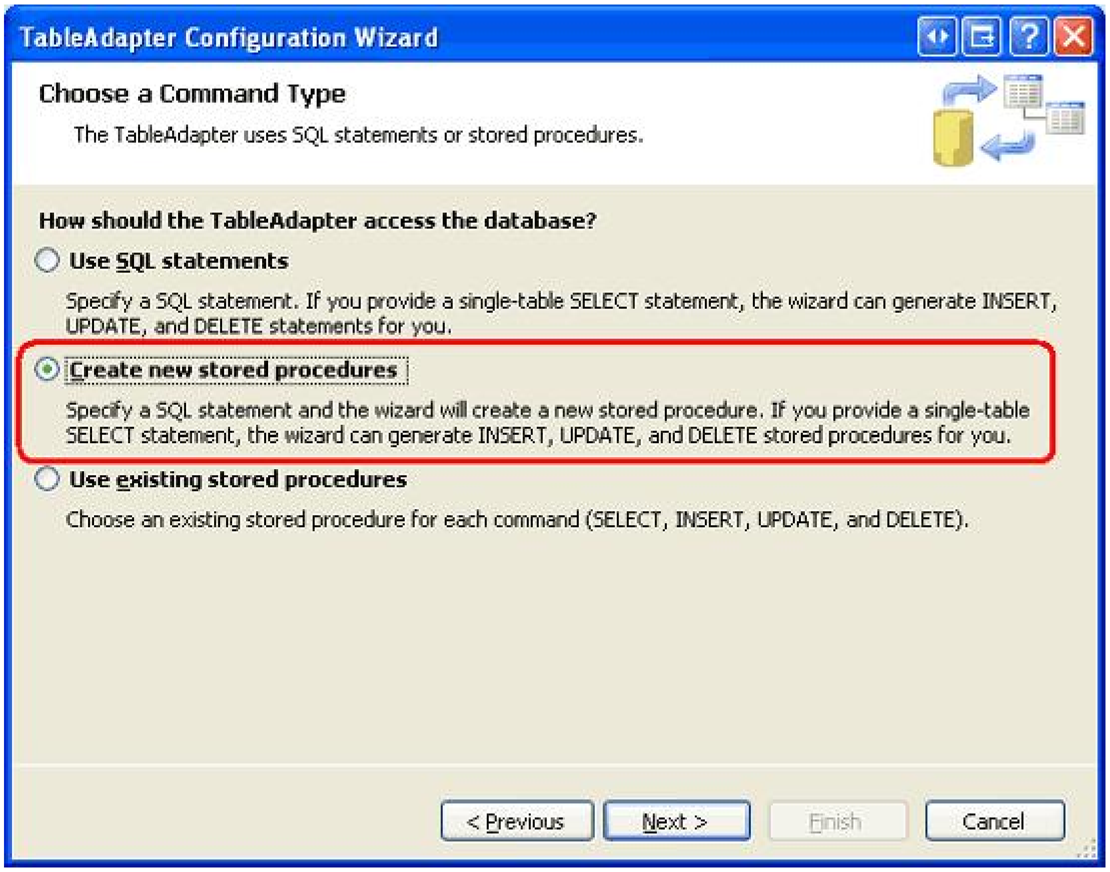
Name
Indicates the name used to look up this column in the Columns collection of a DataTable.

Figure 2: Set the New Column's `Name` and `DataType` Properties

As Figure 2 shows, there are additional properties that can be set, such as whether the values in the column must be unique, if the column is an auto-increment column, whether or not database `NULL` values are allowed, and so on. Leave these values set to their defaults.

Step 2: Creating the `GetProductsWithPriceQuartile` Method

Now that the `ProductsDataTable` has been updated to include the `PriceQuartile` column, we are ready to create the `GetProductsWithPriceQuartile` method. Start by right-clicking on the TableAdapter and choosing Add Query from the context-menu. This brings up the TableAdapter Query Configuration wizard, which first prompts us as to whether we want to use ad-hoc SQL statements or a new or existing stored procedure. Since we don't yet have a stored procedure that returns the price quartile data, let's allow the TableAdapter to create this stored procedure for us. Select the "Create new stored procedure" option and click Next.


TableAdapter Configuration Wizard

Choose a Command Type

The TableAdapter uses SQL statements or stored procedures.

How should the TableAdapter access the database?

( ) Use SQL statements

Specify a SQL statement. If you provide a single-table SELECT statement, the wizard can generate INSERT, UPDATE, and DELETE statements for you.

[✓ Create new stored procedures]

Specify a SQL statement and the wizard will create a new stored procedure. If you provide a single-table SELECT statement, the wizard can generate INSERT, UPDATE, and DELETE stored procedures for you.

( ) Use existing stored procedures

Choose an existing stored procedure for each command (SELECT, INSERT, UPDATE, and DELETE).

Figure 3: Instruct the TableAdapter Wizard to Create the Stored Procedure For Us

In the subsequent screen, shown in Figure 4, the wizard asks us what type of query to add. Since the `GetProductsWithPriceQuartile` method will return all columns and records from the `Products` table, select the “SELECT which returns rows” option and click Next.

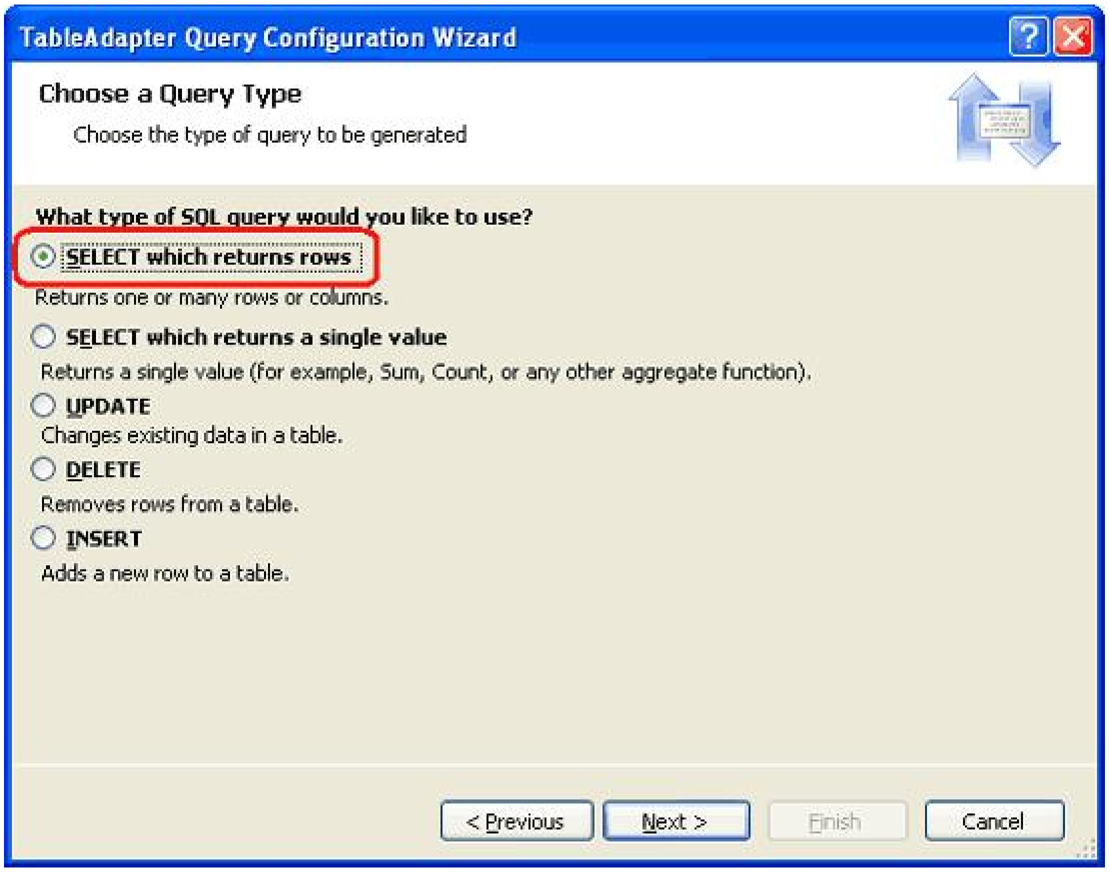

TableAdapter Query Configuration Wizard
Choose a Query Type
Choose the type of query to be generated
What type of SQL query would you like to use?
SELECT which returns rows
Returns one or many rows or columns.
SELECT which returns a single value
Returns a single value (for example, Sum, Count, or any other aggregate function).
UPDATE
Changes existing data in a table.
DELETE
Removes rows from a table.
INSERT
Adds a new row to a table.
< Previous
Next >
Finish
Cancel

Figure 4: Our Query will be a `SELECT` Statement that Returns Multiple Rows

Next we are prompted for the `SELECT` query. Enter the following query into the wizard:

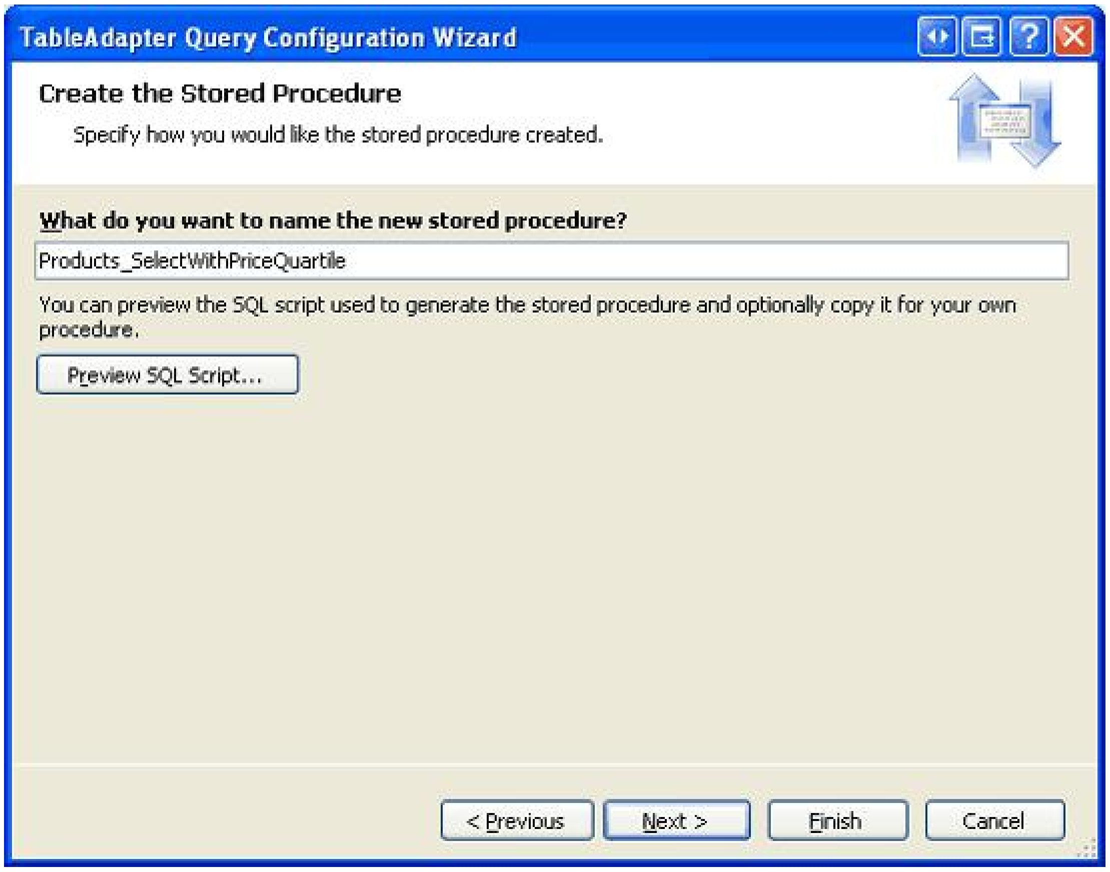
```
SELECT ProductID, ProductName, SupplierID, CategoryID,
       QuantityPerUnit, UnitPrice, UnitsInStock, UnitsOnOrder,
       ReorderLevel, Discontinued,
       NTILE(4) OVER (ORDER BY UnitPrice DESC) as PriceQuartile
FROM Products
```

The above query uses SQL Server 2005's new `NTILE` function to divide the results into four groups where the groups are determined by the `UnitPrice` values sorted in descending order.

Unfortunately, the Query Builder does not know how to parse the `OVER` keyword and will display an error when parsing the above query. Therefore, enter the above query directly in the textbox in the wizard without using the Query Builder.

Note: For more information on NTILE and SQL Server 2005's other ranking functions, see Returning Ranked Results with Microsoft SQL Server 2005 and the Ranking Functions section from the SQL Server 2005 Books Online.

After entering the `SELECT` query and clicking Next, the wizard asks us to provide a name for the stored procedure it will create. Name the new stored procedure `Products_SelectWithPriceQuartile` and click Next.


TableAdapter Query Configuration Wizard

Create the Stored Procedure

Specify how you would like the stored procedure created.

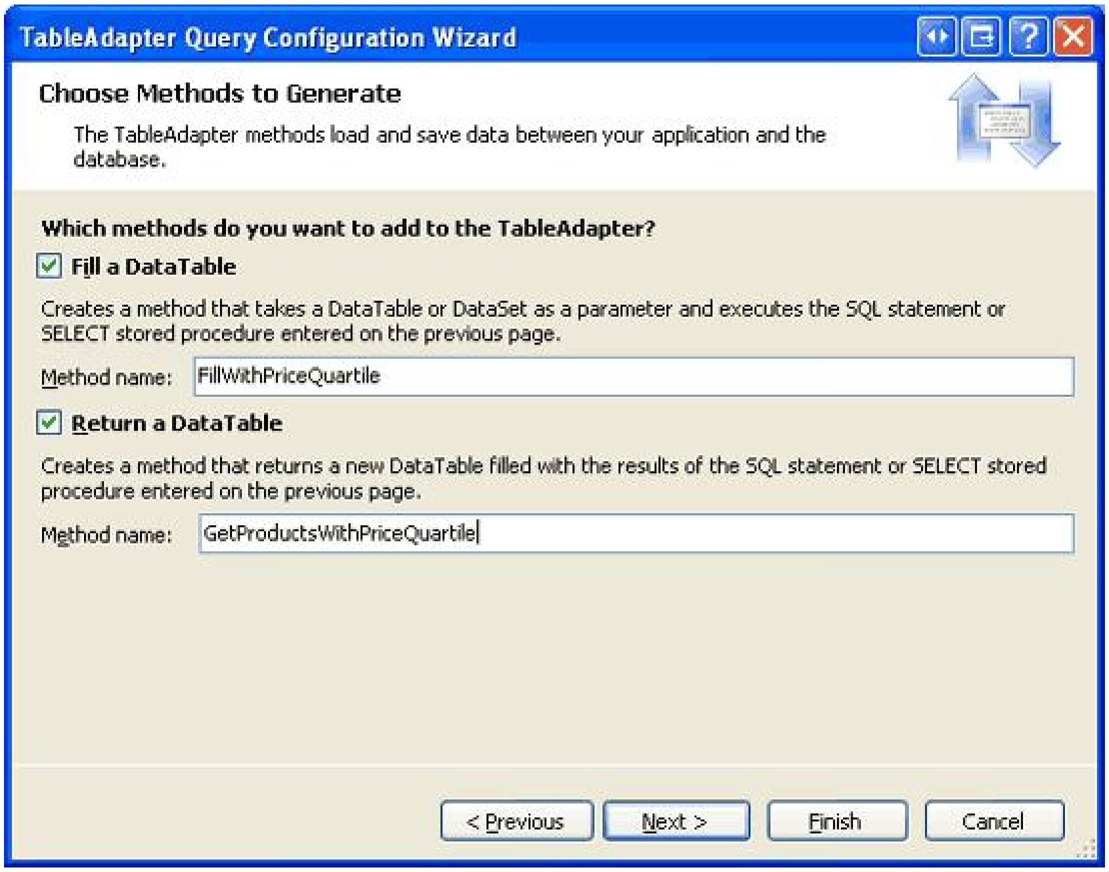
What do you want to name the new stored procedure?

Products_SelectWithPriceQuartile

You can preview the SQL script used to generate the stored procedure and optionally copy it for your own procedure.

Figure 5: Name the Stored Procedure `Products_SelectWithPriceQuartile`

Lastly, we are prompted to name the TableAdapter methods. Leave both the “Fill a DataTable” and “Return a DataTable” checkboxes checked and name the methods `FillWithPriceQuartile` and `GetProductsWithPriceQuartile`.


TableAdapter Query Configuration Wizard

Choose Methods to Generate

The TableAdapter methods load and save data between your application and the database.

Which methods do you want to add to the TableAdapter?

✓ Fill a DataTable

Creates a method that takes a DataTable or DataSet as a parameter and executes the SQL statement or SELECT stored procedure entered on the previous page.

Method name: FillWithPriceQuartile

✓ Return a DataTable

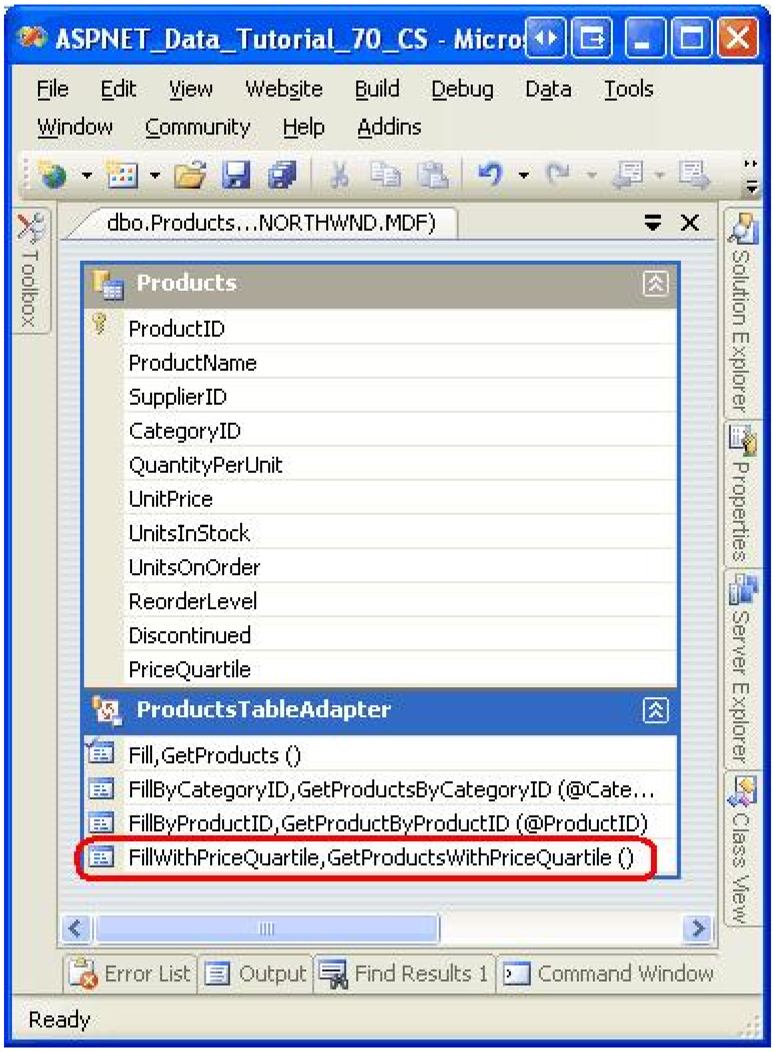
Creates a method that returns a new DataTable filled with the results of the SQL statement or SELECT stored procedure entered on the previous page.

Method name: GetProductsWithPriceQuartile

Figure 6: Name the TableAdapter's Methods and Click Finish

With the `SELECT` query specified and the stored procedure and TableAdapter methods named, click Finish to complete the wizard. At this point you may get a warning or two from the wizard saying that "The `OVER` SQL construct or statement is not supported." These warnings can be ignored.

After completing the wizard, the TableAdapter should include the `FillWithPriceQuartile` and `GetProductsWithPriceQuartile` methods and the database should include a stored procedure named `Products_SelectWithPriceQuartile`. Take a moment to verify that the TableAdapter does indeed contain this new method and that the stored procedure has been correctly added to the database. When checking the database, if you do not see the stored procedure try right-clicking on the Stored Procedures folder and choosing Refresh.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Window Community Help Addins
dbo.Products...NORTHWND.MDF)
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Error List
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Command Window
Ready

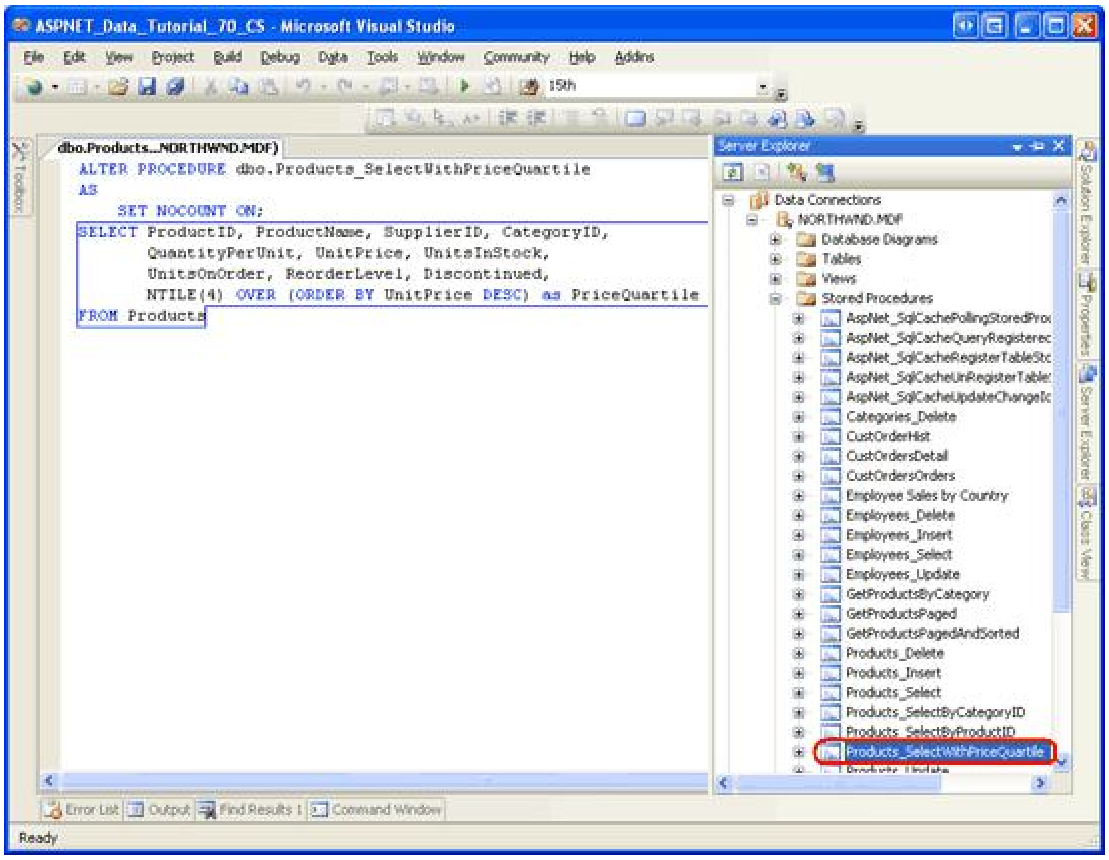
Products

- ProductID
- ProductName
- SupplierID
- CategoryID
- QuantityPerUnit
- UnitPrice
- UnitsInStock
- UnitsOnOrder
- ReorderLevel
- Discontinued
- PriceQuartile

ProductsTableAdapter

- Fill,GetProducts ()
- FillByCategoryID,GetProductsByCategoryID (@Cate...
- FillByProductID,GetProductByProductID (@ProductID)
- FillWithPriceQuartile,GetProductsWithPriceQuartile ()

Figure 7: Verify that a New Method Has Been Added to the TableAdapter


ASPNET_Data_Tutorial_70_CS - Microsoft Visual Studio
File Edit View Project Build Debug Data Tools Window Community Help Addins
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dbo.Products...NORTHWND.MDF)
Server Explorer
Data Connections
NORTHWND.MDF
Database Diagrams
Tables
Views
Stored Procedures
AspNet_SqlCachePollingStoredProc
AspNet_SqlCacheQueryRegisterec
AspNet_SqlCacheRegisterTableStc
AspNet_SqlCacheUnRegisterTable
AspNet_SqlCacheUpdateChangeIc
Categories_Delete
CustOrderHist
CustOrdersDetail
CustOrdersOrders
Employee Sales by Country
Employees_Delete
Employees_Insert
Employees_Select
Employees_Update
GetProductsByCategory
GetProductsPaged
GetProductsPagedAndSorted
Products_Delete
Products_Insert
Products_Select
Products_SelectByCategoryID
Products_SelectByProductID
Products_SelectWithPriceQuartile
Solution Explorer
Properties
Server Explorer
Class View
Toolbox
Error List
Output
Find Results 1
Command Window
Ready

```
ALTER PROCEDURE dbo.Products_SelectWithPriceQuartile
AS
    SET NOCOUNT ON;
SELECT ProductID, ProductName, SupplierID, CategoryID,
       QuantityPerUnit, UnitPrice, UnitsInStock,
       UnitsOnOrder, ReorderLevel, Discontinued,
       NTILE(4) OVER (ORDER BY UnitPrice DESC) as PriceQuartile
FROM Products
```

Figure 8: Ensure that the Database Contains the `Products_SelectWithPriceQuartile` Stored Procedure

Note: One of the benefits of using stored procedures instead of ad-hoc SQL statements is that re-running the TableAdapter Configuration wizard will not modify the stored procedures' column lists. Verify this by right-clicking on the TableAdapter, choosing the Configure option from the context-menu to start the wizard, and then clicking Finish to complete it. Next, go to the database and view the `Products_SelectWithPriceQuartile` stored procedure. Note that its column list has not been modified. Had we been using ad-hoc SQL statements, re-running the TableAdapter Configuration wizard would have reverted this query's column list to match the main query column list, thereby removing the NTILE statement from the query used by the `GetProductsWithPriceQuartile` method.

When the Data Access Layer's `GetProductsWithPriceQuartile` method is invoked, the TableAdapter executes the `Products_SelectWithPriceQuartile` stored procedure and adds a row to the `ProductsDataTable` for each returned record. The data fields returned by the stored procedure are mapped to the `ProductsDataTable`'s columns. Since there is a `PriceQuartile` data field returned from the stored procedure, its value is assigned to the `ProductsDataTable`'s `PriceQuartile` column.

For those TableAdapter methods whose queries do not return a `PriceQuartile` data field, the `PriceQuartile` column's value is the value specified by its `DefaultValue` property. As Figure 2 shows, this value is set to `DBNull`, the default. If you would prefer a different default value, simply set the `DefaultValue` property accordingly. Just make sure that the `DefaultValue` value is valid given the column's `DataType` (i.e., `System.Int32` for the `PriceQuartile` column).

At this point we have performed the necessary steps for adding an additional column to a DataTable. To verify that this additional column works as expected, let's create an ASP.NET page that displays each product's name, price, and price quartile. Before we do that, though, we first need to update the Business Logic Layer to include a method that calls down to the DAL's `GetProductsWithPriceQuartile` method. We will update the BLL next, in Step 3, and then create the ASP.NET page in Step 4.

Step 3: Augmenting the Business Logic Layer

Before we use the new `GetProductsWithPriceQuartile` method from the Presentation Layer, we should first add a corresponding method to the BLL. Open the `ProductsBLLWithSprocs` class file and add the following code:

```
<System.ComponentModel.DataObjectMethodAttribute_
    (System.ComponentModel.DataObjectMethodType.Select, False)> _
Public Function GetProductsWithPriceQuartile() As NorthwindWithSprocs.ProductsDataTable
    Return Adapter.GetProductsWithPriceQuartile()
End Function
```

Like the other data retrieval methods in `ProductsBLLWithSprocs`, the `GetProductsWithPriceQuartile` method simply calls the DAL's corresponding `GetProductsWithPriceQuartile` method and returns its results.

Step 4: Displaying the Price Quartile Information in an ASP.NET Web Page

With the BLL addition complete we're ready to create an ASP.NET page that shows the price quartile for each product. Open the `AddingColumns.aspx` page in the `AdvancedDAL` folder and drag a GridView from the Toolbox onto the Designer, setting its `ID` property to `Products`. From the GridView's smart tag, bind it to a new ObjectDataSource named `ProductsDataSource`. Configure the ObjectDataSource to use the `ProductsBLLWithSprocs` class's `GetProductsWithPriceQuartile` method. Since this will be a read-only grid, set the drop-down lists in the UPDATE, INSERT, and DELETE tabs to "(None)".

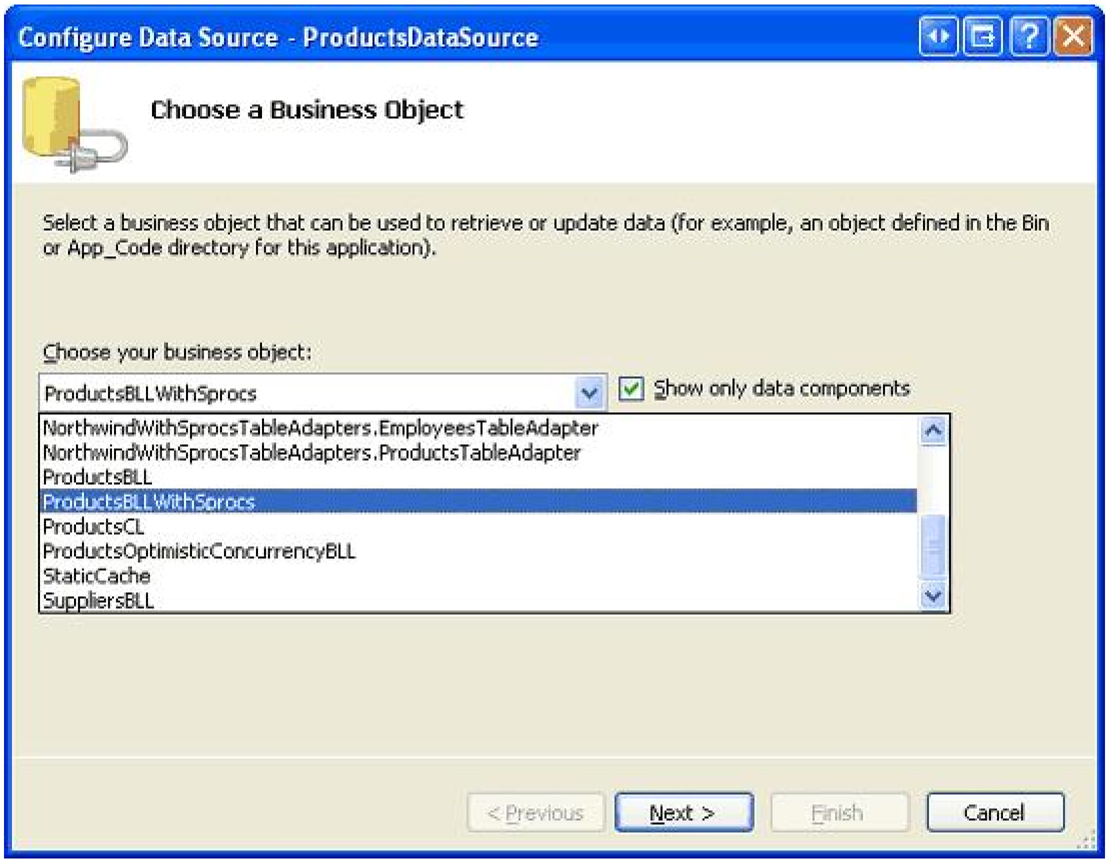
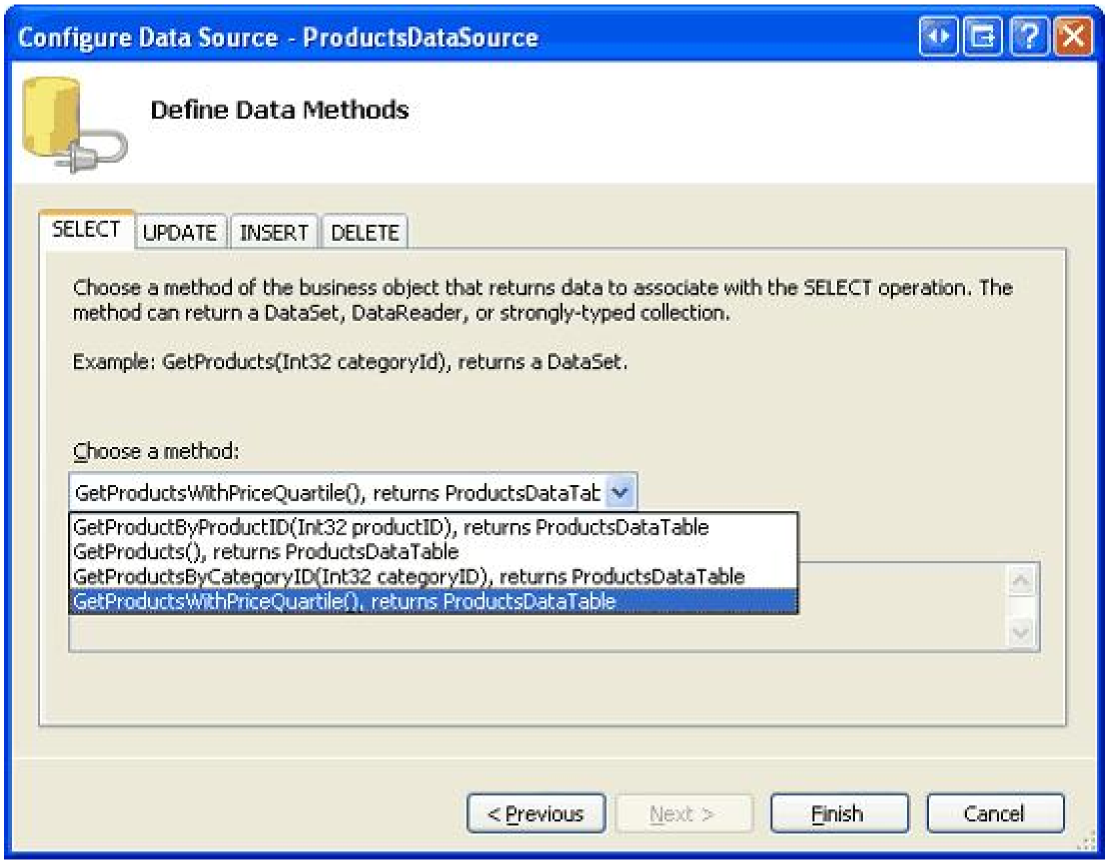

Configure Data Source - ProductsDataSource
Choose a Business Object
Select a business object that can be used to retrieve or update data (for example, an object defined in the Bin or App_Code directory for this application).
Choose your business object:
ProductsBLLWithSprocs
Show only data components
NorthwindWithSprocsTableAdapters.EmployeesTableAdapter
NorthwindWithSprocsTableAdapters.ProductsTableAdapter
ProductsBLL
ProductsBLLWithSprocs
ProductsCL
ProductsOptimisticConcurrencyBLL
StaticCache
SuppliersBLL
< Previous
Next >
Finish
Cancel

Figure 9: Configure the ObjectDataSource to Use the `ProductsBLLWithSprocs` Class



Choose a method of the business object that returns data to associate with the SELECT operation. The method can return a DataSet, DataReader, or strongly-typed collection.

Example: GetProducts(Int32 categoryId), returns a DataSet.

Choose a method:

GetProductsWithPriceQuartile(), returns ProductsDataTab

GetProductByProductID(Int32 productID), returns ProductsDataTable
GetProducts(), returns ProductsDataTable
GetProductsByCategoryID(Int32 categoryID), returns ProductsDataTable
GetProductsWithPriceQuartile(), returns ProductsDataTable

Figure 10: Retrieve Product Information from the `GetProductsWithPriceQuartile` Method

After completing the Configure Data Source wizard, Visual Studio will automatically add a BoundField or CheckBoxField to the GridView for each of the data fields returned by the method. One of these data fields is `PriceQuartile`, which is the column we added to the `ProductsDataTable` in Step 1.

Edit the GridView's fields, removing all but the `ProductName`, `UnitPrice`, and `PriceQuartile` BoundFields. Configure the `UnitPrice` BoundField to format its value as a currency and have the `UnitPrice` and `PriceQuartile` BoundFields right- and center-aligned, respectively. Finally, update the remaining BoundFields' `HeaderText` properties to "Product", "Price", and "Price Quartile", respectively. Also, check the "Enable Sorting" checkbox from the GridView's smart tag.

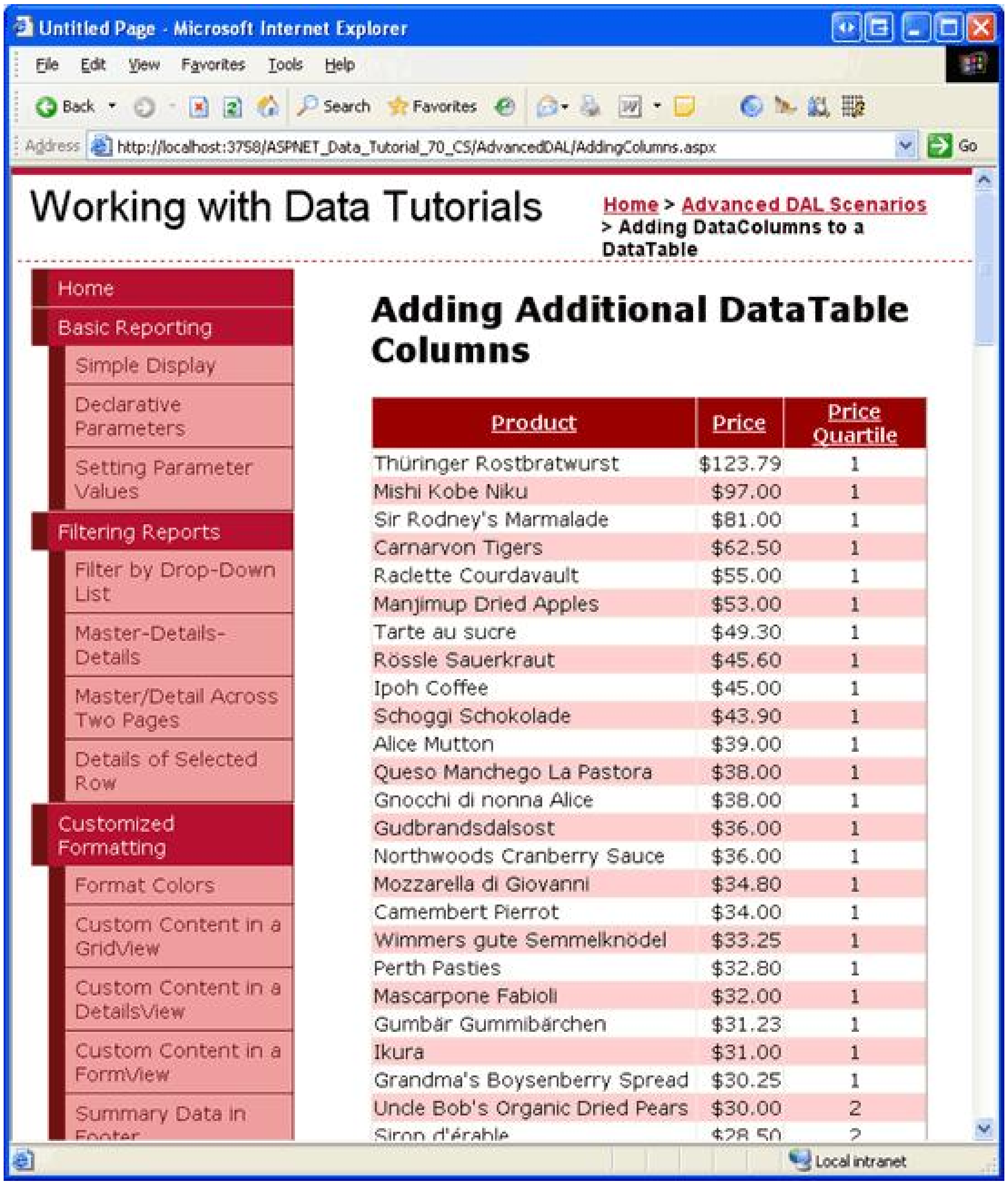
After these modifications, the GridView and ObjectDataSource's declarative markup should look like the following:

```
<asp:GridView ID="Products" runat="server" AllowSorting="True"
    AutoGenerateColumns="False" DataKeyNames="ProductID"
    DataSourceID="ProductsDataSource">
    <Columns>
        <asp:BoundField DataField="ProductName" HeaderText="Product"
            SortExpression="ProductName" />
        <asp:BoundField DataField="UnitPrice" DataFormatString="{0:c}"
            HeaderText="Price" HtmlEncode="False"
```

```
                SortExpression="UnitPrice">
                <ItemStyle HorizontalAlign="Right" />
            </asp:BoundField>
            <asp:BoundField DataField="PriceQuartile" HeaderText="Price Quartile"
                SortExpression="PriceQuartile">
                <ItemStyle HorizontalAlign="Center" />
            </asp:BoundField>
        </Columns>
    </asp:GridView>

    <asp:ObjectDataSource ID="ProductsDataSource" runat="server"
        OldValuesParameterFormatString="original_{0}"
        SelectMethod="GetProductsWithPriceQuartile"
        TypeName="ProductsBLLWithSprocs">
    </asp:ObjectDataSource>
```

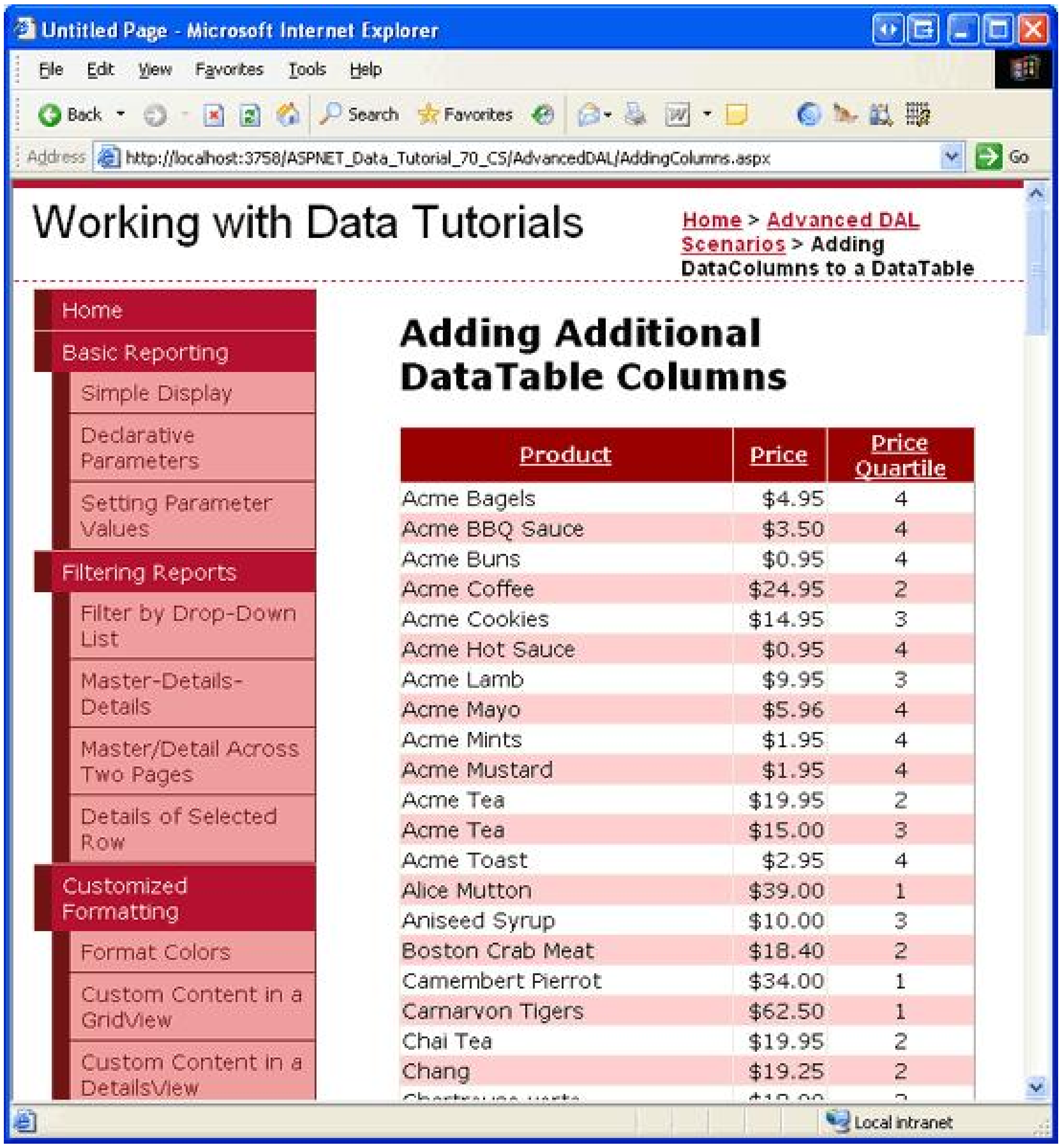
Figure 11 shows this page when visited through a browser. Note that, initially, the products are ordered by their price in descending order with each product assigned an appropriate `PriceQuartile` value. Of course this data can be sorted by other criteria with the “Price Quartile” column value still reflecting the product’s ranking with respect to price (see Figure 12).


Untitled Page - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://localhost:3758/ASPNET_Data_Tutorial_70_CS/AdvancedDAL/AddingColumns.aspx
Go
Working with Data Tutorials
Home > Advanced DAL Scenarios > Adding DataColumns to a DataTable
Home
Basic Reporting
Simple Display
Declarative Parameters
Setting Parameter Values
Filtering Reports
Filter by Drop-Down List
Master-Details-Details
Master/Detail Across Two Pages
Details of Selected Row
Customized Formatting
Format Colors
Custom Content in a GridView
Custom Content in a DetailsView
Custom Content in a FormView
Summary Data in Footer
Local intranet

Adding Additional DataTable Columns

Product	Price	Price Quartile
Thüringer Rostbratwurst	$123.79	1
Mishi Kobe Niku	$97.00	1
Sir Rodney's Marmalade	$81.00	1
Carnarvon Tigers	$62.50	1
Raclette Courdavault	$55.00	1
Manjimup Dried Apples	$53.00	1
Tarte au sucre	$49.30	1
Rössle Sauerkraut	$45.60	1
Ipoh Coffee	$45.00	1
Schoggi Schokolade	$43.90	1
Alice Mutton	$39.00	1
Queso Manchego La Pastora	$38.00	1
Gnocchi di nonna Alice	$38.00	1
Gudbrandsdalsost	$36.00	1
Northwoods Cranberry Sauce	$36.00	1
Mozzarella di Giovanni	$34.80	1
Camembert Pierrot	$34.00	1
Wimmers gute Semmelknödel	$33.25	1
Perth Pasties	$32.80	1
Mascarpone Fabioli	$32.00	1
Gumbär Gummibärchen	$31.23	1
Ikura	$31.00	1
Grandma's Boysenberry Spread	$30.25	1
Uncle Bob's Organic Dried Pears	$30.00	2
Sirop d'érable	$28.50	2

Figure 11: The Products are Ordered by their Prices


Untitled Page - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://localhost:3758/ASPNET_Data_Tutorial_70_CS/AdvancedDAL/AddingColumns.aspx
Go
Working with Data Tutorials
Home > Advanced DAL Scenarios > Adding DataColumns to a DataTable
Home
Basic Reporting
Simple Display
Declarative Parameters
Setting Parameter Values
Filtering Reports
Filter by Drop-Down List
Master-Details-Details
Master/Detail Across Two Pages
Details of Selected Row
Customized Formatting
Format Colors
Custom Content in a GridView
Custom Content in a DetailsView
Local intranet

Adding Additional DataTable Columns

Product	Price	Price Quartile
Acme Bagels	$4.95	4
Acme BBQ Sauce	$3.50	4
Acme Buns	$0.95	4
Acme Coffee	$24.95	2
Acme Cookies	$14.95	3
Acme Hot Sauce	$0.95	4
Acme Lamb	$9.95	3
Acme Mayo	$5.96	4
Acme Mints	$1.95	4
Acme Mustard	$1.95	4
Acme Tea	$19.95	2
Acme Tea	$15.00	3
Acme Toast	$2.95	4
Alice Mutton	$39.00	1
Aniseed Syrup	$10.00	3
Boston Crab Meat	$18.40	2
Camembert Pierrot	$34.00	1
Carnarvon Tigers	$62.50	1
Chai Tea	$19.95	2
Chang	$19.25	2

Figure 12: The Products are Ordered by their Names

Note: With a few lines of code we could augment the GridView so that it colored the product rows based on their `PriceQuartile` value. We might color those products in the first quartile a light green, those in the second quartile a light yellow, and so forth. I encourage you to take a moment to add this functionality. If you need a refresher on formatting a GridView, consult the Custom Formatting Based Upon Data tutorial.

An Alternative Approach - Creating Another TableAdapter

As we saw in this tutorial, when adding a method to a TableAdapter that returns data fields other than those spelled out by the main query, we can add corresponding columns to the DataTable. Such an approach, however, works well only if there are a small number of methods in the TableAdapter that return different data fields and if those alternate data fields do not vary too much from the main query.

Rather than adding columns to the DataTable, you can instead add another TableAdapter to the DataSet that contains the methods from the first TableAdapter that return different data fields. For this tutorial, rather than add the `PriceQuartile` column to the `ProductsDataTable` (where it is only used by the `GetProductsWithPriceQuartile` method), we could have added an additional TableAdapter to the DataSet named `ProductsWithPriceQuartileTableAdapter` that used the `Products_SelectWithPriceQuartile` stored procedure as its main query. ASP.NET pages that needed to get product information with the price quartile would use the `ProductsWithPriceQuartileTableAdapter`, while those that did not could continue to use the `ProductsTableAdapter`.

By adding a new TableAdapter, the DataTables remain untarnished and their columns precisely mirror the data fields returned by their TableAdapter's methods. However, additional TableAdapters can introduce repetitive tasks and functionality. For example, if those ASP.NET pages that displayed the `PriceQuartile` column also needed to provide insert, update, and delete support, the `ProductsWithPriceQuartileTableAdapter` would need to have its `InsertCommand`, `UpdateCommand`, and `DeleteCommand` properties properly configured. While these properties would mirror the `ProductsTableAdapter`'s, this configuration introduces an extra step. Moreover, there are now two ways to update, delete, or add a product to the database - through the `ProductsTableAdapter` and `ProductsWithPriceQuartileTableAdapter` classes.

The download for this tutorial includes a `ProductsWithPriceQuartileTableAdapter` class in the `NorthwindWithSprocs` DataSet that illustrates this alternative approach.

Summary

In most scenarios, all of the methods in a TableAdapter will return the same set of data fields, but there are times when a particular method or two may need to return an additional field. For example, in the Master/Detail Using a Bulleted List of Master Records with a Details DataList tutorial we added a method to the `CategoriesTableAdapter` that, in addition to the main query's data fields, returned a `NumberOfProducts` field that reported the number of products associated with each category. In this tutorial we looked at adding a method in the `ProductsTableAdapter` that returned a `PriceQuartile` field in addition to the main query's data fields. To capture additional data fields returned by the TableAdapter's methods we need to add corresponding columns to the DataTable.

If you plan on manually adding columns to the DataTable, it is recommended that the TableAdapter use stored procedures. If the TableAdapter uses ad-hoc SQL statements, any time the TableAdapter Configuration wizard is run all of the methods' data field lists revert to the data fields returned by the main query. This problem does not extend to stored procedures, which is why they are recommended and were used in this tutorial.

Happy Programming!

About the Author

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Special Thanks To…

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