



ASP.NET 2.0 Data Control Tips and Tricks

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Another Lucid Presentation



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- **Developer**
 - ? Focus: ASP.NET, ASP, VB, C#, SQL Server, ...
 - ? MCSD
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 - ? Author/co-author of a dozen books, including...
 - *ASP.NET for Developers*
 - *Access Cookbook, 2nd edition*
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Agenda

- ASP.NET 2.0 Data Binding
- Data Source Controls
- Grid View Control
- DetailsView and FormView Controls
- Data Control How To's

ASP.NET 2.0 Data Binding

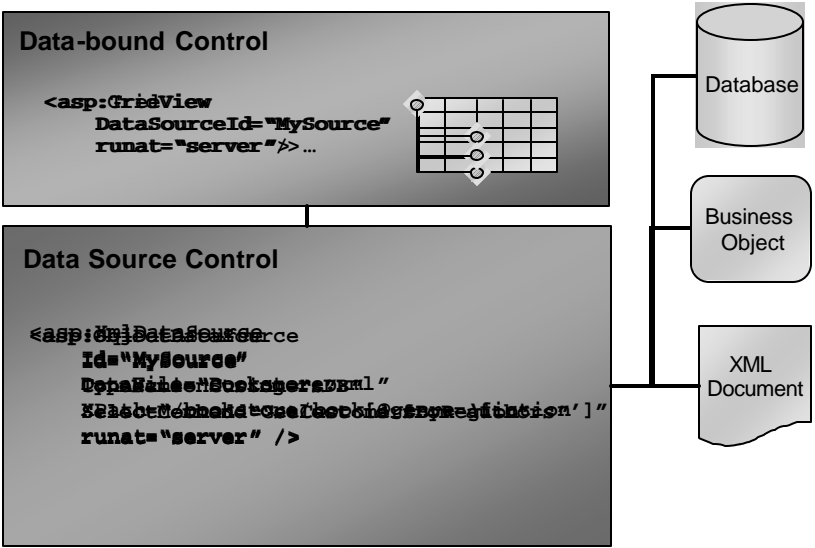
Binding Data to Controls

- ASP.NET 1.x supported rich 1-way binding syntax but you still had to write quite a bit of code to get data in and out of controls
- ASP.NET 2.0 supports two-way (read/write) binding with no code in many situations

Two Types Of Data Controls

- **Data Source Controls**
 - ? Non-UI controls (no rendering)
 - ? Represent different backend data sources
 - E.g., Databases, Business Objects, XML, or Web Services
 - Can easily extend by writing custom data sources
 - ? Provide rich capabilities over data
 - Sorting, paging, filtering, updating, deleting, inserting
 - ? Expose data through tabular or hierarchical interfaces to data-bound controls
- **Data-bound Controls**
 - ? UI controls that render data
 - E.g., GridView, DetailsView, FormView, TreeView, Menu
 - ? Can auto-bind to data exposed from a data source
 - ? Will fetch data at the appropriate time in lifecycle
 - ? Can optionally take advantage of data source capabilities

Data Binding in ASP.NET 2.0



Data Source Controls

Data Source Control

- A family of controls that assist in data binding
 - ? Middleman between data bound controls and data sources
 - ? No UI
- Types of Data Source Controls
 - ? Tabular
 - SqlDataSource
 - AccessDataSource
 - ObjectDataSource
 - ? Hierarchical
 - XmlDataSource
 - SiteMapDataSource

SqlDataSource

- Supports reading and writing to ADO.NET data provider
 - ? Supports SqlClient, OracleClient, OleDb, and Odbc providers

ObjectDataSource

- Allows you to take advantage of data binding even if you are using an n-tier architecture
- In order to use with a class, the class must...
 - ? have a default, parameterless constructor
 - ? be stateless
 - ? have select, update, insert, and delete methods with certain signature

New 2.0 Data-Bound Controls

- List Controls
 - ? BulletedList
- Composite Controls
 - ? GridView
 - ? DetailsView
 - ? FormView
- Hierarchical Controls
 - ? TreeView
 - ? Menu

GridView Control

GridView Control

Example: GridView.aspx

- Next generation DataGrid
- Walk-through of grid with automatic sorting (ascending & descending), pagination
 1. Add GridView to page
 2. Using GridView Tasks pane, choose DataSource
 3. Check EnablePaging & EnableSorting

GridView with Updating

Example: GridViewUpdate1.aspx

- Can also be done without code
 1. Add GridView to page
 2. Choose Data Source
 - On "Configure the select statement" page
 - Click Advanced Options
 - Check "Generate Insert, Update, and Delete statements"
 3. Configure GridView
 - Check "Enable Editing" and/or "Enable Deleting"

GridView with Stored Procedure Updating

Example: GridViewUpdate2.aspx

1. Add GridView to page
2. Configure Data Source
 - ? "Specify a custom SQL statement or stored proc"
 - ? Select stored procs for each data source operation
3. Configure GridView
 - ? Check "Enable Editing", etc.

GridView with ObjectDataSource Control

Example: GridViewODS.aspx & Customer.cs

1. Create Middle Tier class
 - Create static, stateless methods
 - Mark class and methods with DataObjectMethod attribute (requires using System.ComponentModel)
2. Configure Data Source
 - ? Choose a business object
 - ? Define data methods
3. Configure GridView
 - ? Check "Enable Editing", etc.

Programming GridView: Things You Need to Know

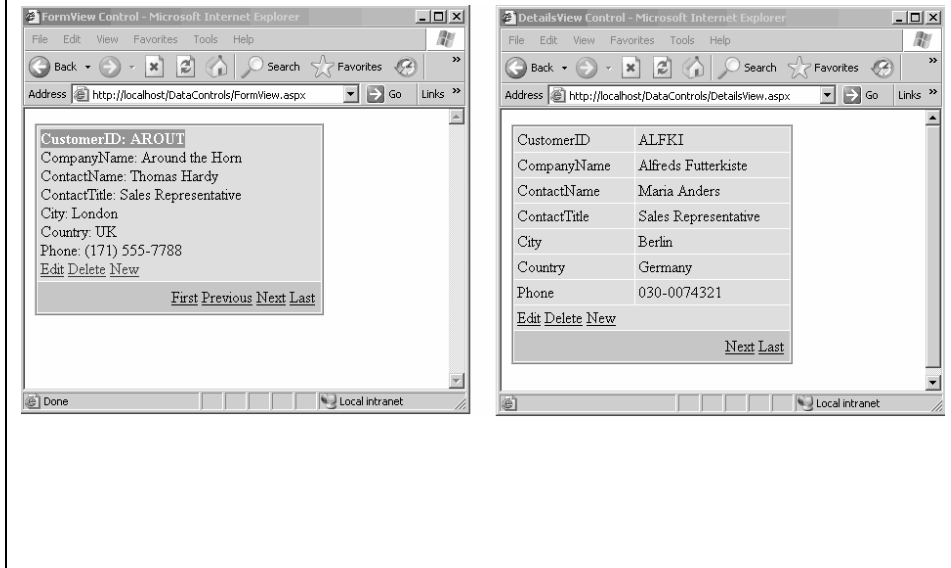
1. How to hook in
 - What events are most useful
 - When to use events of GridView vs. Data Source Control
2. How to programmatically access controls and fields

DetailsView and FormView Controls

The Single-Record Form Problem

- ASP.NET 1.x provided no help to the developer having to create a single-record “form” view of data
- ASP.NET 2.0 gives us two solutions
 - ? DetailsView – places fields in a table
 - uses BoundFields by default
 - ? FormView – uses a free-form template
 - uses template fields by default
 - more flexibility
- Both support editing, inserts, pagination, template fields, validation controls

FormView vs. DetailsView Controls



Programming DetailsView and FormView: Things You Need to Know

1. How to hook in
 - What events are most useful
 - When to use events of Data Control vs. Data Source Control
2. How to programmatically access controls and fields

Details/Form View Events of Note (1 of 2) DataBound and the “ing” Events

- **GridView DataBound**
 - ? Use to modify data as it is being loaded into control, e.g., setting a default value
- **GridView ItemUpdating**
 - ? Use to manipulate data before row is updated in database, e.g., saving a timestamp field.
- **GridView ItemInserting**
 - ? Use to manipulate data before row is inserted to database, e.g., saving a timestamp field.
- **GridView ItemDeleting**
 - ? Use to manipulate data before row is deleted from database, e.g., stopping delete.

Details/Form View Events of Note (2 of 2) The “ed” Events

- **GridView ItemUpdated**
 - ? Use to react to database update, e.g. refreshing another control on page or handling update exceptions.
- **GridView ItemInserted**
 - ? Use to react to database insert, e.g. refreshing another control on page or handling insert exceptions
- **GridView ItemDeleted**
 - ? Use to react to database delete, e.g. refreshing another control on page or handling delete exceptions
- **DataSourceControl Inserted**
 - ? Useful for grabbing Identity field value and refreshing page to display new record

Data Control How To's

How do I...

1. Filter one data control based on another?
2. Set a default value of a control for an insert?
3. Confirm a record delete for a data control?
4. Use a drop-down control for editing with a data control?
5. Update fields that aren't shown (e.g., time stamp fields) when a row is updated?
6. Refresh one control when another changes?
7. Not pass an identity column during an insert to the database? ...and... After the insert, retrieve the newly inserted record, complete with identity column?
8. Handle exceptions?

1. How do I...

- Filter one data control based on another?
 - ? Create a ControlParameter in the second control's Data Source control that points to the selected value of the first control
- Example: GridViewFiltered.aspx

```
<asp:SqlDataSource ...>  
  <SelectParameters>  
    <asp:ControlParameter ControlID="ddlCountryFilter" Name="Country"  
      PropertyName="SelectedValue"  
      Type="String" />  
  </SelectParameters>  
</asp:SqlDataSource>
```

Different Types of Parameters

- You're not limited to using Control Parameters
- Also available
 - ? <asp:QueryStringParameter>
 - ? <asp:CookieParameter>
 - ? <asp:ProfileParameter>
 - ? <asp:SessionParameter>
 - ? <asp:Parameter>

2. How do I...

- Set a default value of a control for an insert?
 - ? Use DataBound event, checking the CurrentMode property

```
protected void fvCustomers_DataBound(object sender, EventArgs e) {
    if (fvCustomers.CurrentMode == FormViewMode.Insert) {
        ((TextBox)fvCustomers.FindControl("CityTextBox")).Text = "Seattle";
        ((TextBox)fvCustomers.FindControl("CountryTextBox")).Text = "USA";
    }
}
```

- Example: FormView.aspx

2a. How do I...

- What about finding control when using DetailsView?
 - ? Problem: you can't get at controls by name unless you use template field. Solution: use template field

```
<asp:TemplateField HeaderText="Country">
  <ItemTemplate>
    <asp:Label runat="server" ID="lblCountry" Text='<%=#Bind("Country")%' />
  </ItemTemplate>
  <EditItemTemplate>
    <asp:Textbox runat="server" ID="txtCountryEdit" Text='<%=#Bind("Country")%' />
  </EditItemTemplate>
  <InsertItemTemplate>
    <asp:Textbox runat="server" ID="txtCountryInsert" Text='<%=#Bind("Country")%' />
  </InsertItemTemplate>
</asp:TemplateField>
```

- Example: DetailsViewDefault.aspx

3. How do I...

- Confirm a record delete for a data control?
 - ? Use a templated LinkButton control w/ client-side JavaScript

```
<asp:TemplateField>
  <ItemTemplate>
    <asp:LinkButton ID="lbDelete" Runat="server"
      OnClientClick="return confirm('OK to delete record?');">
      CommandName="Delete"
      Text = "Delete"></asp:LinkButton>
    </ItemTemplate>
  </asp:TemplateField>
```

- ? Example: GridViewUpdate2DeleteConfirm.aspx

4. How do I...

- Use a drop-down control for editing with a data control?
 - ? Use a template field

```
<asp:TemplateField HeaderText="ReportsTo" SortExpression="ReportsTo">
  <EditItemTemplate >
    <asp:DropDownList ID="ddlReportsTo" runat="server"
      SelectedValue = '<%=# Bind("ReportsTo") %>'
      DataSourceID="sdsReportsTo" DataTextField="EmployeeName"
      DataValueField="EmployeeId"></asp:DropDownList>
    </EditItemTemplate >
  <ItemTemplate >
    <asp:Label ID="lbIReportsTo" runat="server"
      Text='<%=# Bind("ReportsToName") %>'></asp:Label>
    </ItemTemplate >
  </asp:TemplateField>
```

Example: EmployeeGridWithDropDown.aspx

4. How do I...

- Use a drop-down control for editing with a data control? (*continued*)
 - ? Don't forget to provide a NULL to the list!

```
<asp:SqlDataSource ID="sdsReportsTo" runat="server" ..."  
    SelectCommand=  
    "SELECT EmployeeId,  
    LastName + ', ' + FirstName AS EmployeeName  
    FROM Employees  
    UNION  
    SELECT NULL, NULL  
    ORDER BY LastName + ', ' + FirstName">  
</asp:SqlDataSource>
```

5. How do I...

- Update fields that aren't shown (e.g., time stamp fields) when a row is updated?
 - ? Template the fields so you can control updatability/visibility during edits/inserts
 - ? For Insert
 - Use ItemInserting event and Values collection
 - ? For Update
 - Use ItemUpdating event and NewValues collection
- Example: `DetailsViewHiddenFields.aspx`

6. How do I...

- Refresh one control when another changes?
 - ? Call `DataBind()` method of second control from first control's "ed" event
- Example: `DrillDown1Page.aspx`

7. How do I...

- Not pass an identity column during an insert to the database?
 - ? Set `InsertVisible` property of control to false
- After the insert, retrieve the newly inserted record, complete with identity column?
 - ? Uses `Inserted` event of `DataSource` control and grab the value of the identity column using `e.Command.Parameters` collection
- Example: `EmpDrillDown.aspx/EmpDetails.aspx`

8. How do I...

- Handle Exceptions?

? Use one of "ed" events & retrieve exception:

```
Exception exp = e.Exception;
if (exp != null)
{
    lblMsg.Text = "Insert failed. Details: " + exp.Message;
    // If using ObjectDataSource use exp.InnerException.Message instead
    e.ExceptionHandled = true;
    e.KeepInInsertMode = true; // keeps user editing.
}
```

- Example: EmpDrillDown.aspx/EmpDetails.aspx

Summary

- ASP.NET 2.0 supports two-way code-less data binding
- Data Source Controls are a family of controls that assist in data binding
- GridView control is like DataGrid on steroids
- Single-record form problem solved with DetailsView and FormView controls
- Using Parameters, Properties, and Events you can tie controls together

Questions?

- But don't ping my cheese with your bandwidth!



Thank You!

- Special thanks to Julie!
- Please complete evaluation forms
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