

AWF13:

**What's So Funny About Peace,
Love, and Server Controls?**

Paul Litwin

Fred Hutchinson Cancer Research Center /
Deep Training

paul@deeptesting.com

twitter.com/plitwin



Paul Litwin

- **Developer**

- Focus: ASP.NET, ASP, C#, SQL Server, Reporting Services
- MCSD
- Microsoft MVP
- Programmer Manger with Fred Hutchinson Cancer Research Center (Seattle)

- **Co-Founder and Senior Trainer**

- Deep Training
 - www.deeptraining.com

- **Conference Chair/Speaker**

- Chair, Microsoft ASP.NET Connections
- Member INETA Speakers Bureau

- **Author of over a dozen books & courses, including...**

- *Agile ASP.NET Unleashed (writing...)*
- *AppDev SQL Server 2005 & 2008 Reporting Services Courses*
- *ASP.NET for Developers*
- *Access Cookbook*
- *Access 2002 Desktop/Enterprise Dev Handbook*



Updated Slides & Samples Download

- You can download them from:
 - www.deeptraining.com/litwin

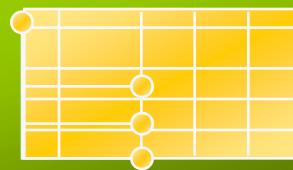
Agenda

- **Web Form Data Control Binding Story**
- Data Control Events
- What's Passed to e in Each Event?
- What Can I Do in Each Event?
- Data Control Tips and Tricks

Data Binding in ASP.NET

Data-bound Control

```
<asp:GridView  
  DataSourceId="MySource"  
  runat="server" />...
```



Data Source Control

```
<asp:SqlDataSource  
  Id="MySource"  
  ConnectionString="Server=.;Database=aspnetdb;"  
  SelectCommand="SELECT * FROM aspnet_Users'" />
```

Database

Business
Object

XML
Document

Programming Data Controls: 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

Interesting Data Control Stuff

- **BoundFields don't have IDs**
 - No easy way to refer to programmatically except by position
- **TemplateFields**
 - Allows you to use any “<asp:” control
 - Eval provides read-only data-binding
 - Bind provides two-way data-binding

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GridView Events

| Event | When? |
|-----------------------------|--|
| DataBinding | As grid binds to data source |
| DataBound | After grid has bound to data source |
| RowCreated | Triggered for each row as displayed on grid |
| RowDataBound | After a row has been bound to data source |
| PageIndexChanging | About to change page |
| PageIndexChanged | After page has changed |
| RowCommand | At start of any row command |
| RowDeleting | About to delete a row |
| RowDeleted | After a row has been deleted |
| RowEditing | As row is edited |
| RowCancelingEdit | About to cancel edits |
| RowUpdating | About to save a row |
| RowUpdated | After a row has been saved |
| SelectedIndexChanged | About to change selected row |
| SelectedIndexChanged | After a row has been selected |
| Sorting | About to sort grid |
| Sorted | After grid has been sorted |

GridView Events

- Grid page displays
 - DataBinding
 - For each row in current page
 - RowCreated
 - RowDataBound
 - DataBound

GridView Events

- User navigates to new page
 - RowCommand
 - PageIndexChanging
 - PageIndexChanged
 - DataBinding
 - For each row in current page
 - RowCreated
 - RowDataBound
 - DataBound

GridView Events

- **User edits row**
 - RowCommand
 - RowEditing
- **User saves changes**
 - RowCommand
 - RowUpdating
 - RowUpdated
- **User cancels changes**
 - RowCommand
 - RowCancelingEdit

GridView Events

- User deletes row
 - RowCommand
 - RowDeleting
 - RowDeleted

FormView/DetailsView Events

| Event | When? |
|--------------------------|--|
| DataBinding | As form binds to data source |
| DataBound | After form has bound to data source |
| ItemCreated | As data is displayed in form |
| PageIndexChanging | About to change page |
| PageIndexChanged | After page has changed |
| ItemCommand | At start of any command |
| ModeChanging | At start of mode changing |
| ModeChanged | After mode has changed |
| ItemDeleting | About to delete a row |
| ItemDeleted | After a row has been deleted |
| ItemUpdating | About to save a row |
| ItemUpdated | After a row has been saved |

FormView/DetailsView Events

- Page displays
 - DataBinding
 - ItemCreated
 - DataBound

FormView/DetailsView Events

- User navigates to new page
 - ItemCommand
 - PageIndexChanging
 - PageIndexChanged
 - DataBinding
 - ItemCreated
 - DataBound

FormView/DetailsView Events

- **User edits form**

- ItemCommand
- ModeChanging
- ModeChanged
- <page displays events>

- **User saves changes**

- ItemCommand
- ItemUpdating
- ItemUpdated
- ModeChanging
- ModeChanged
- <page displays events>

- **User cancels changes**

- ItemCommand
- ModeChanging
- ModeChanged
- <page displays events>

FormView/DetailsView Events

- **User deletes row**
 - ItemCommand
 - ItemDeleting
 - ItemDeleted
 - <user navigates to new page events>
- **User inserts new row**
 - ItemCommand
 - ModeChanging
 - ModeChanged
 - <page displays events>

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- **What Can I Do in Each Event?**
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GridView Events

| Event | EventArgs |
|-----------------------|---|
| PageIndexChanged | -- |
| PageIndexChanging | Cancel, NewPageIndex |
| RowCancelingEdit | Cancel, RowIndex |
| RowCommand | CommandArgument, CommandName, CommandSource |
| RowDeleted | AffectedRows, Exception, ExceptionHandled, Keys, Values |
| RowDeleting | Cancel, Keys, RowIndex, Values |
| RowEditing | Cancel, NewEditIndex |
| RowUpdated | AffectedRows, Exception, ExceptionHandled, KeepInEditMode, Keys, NewValues, OldValues |
| RowUpdating | Cancel, Keys, RowIndex, NewValues, OldValues |
| SelectedIndexChanged | -- |
| SelectedIndexChanging | Cancel, NewSelectedIndex |
| Sorted | -- |
| Sorting | Cancel, SortDirection, SortExpression |
| RowCreated | Row |
| DataBinding | -- |
| DataBound | -- |
| RowDataBound | Row |

FormView/DetailsView Events

| Event | EventArgs |
|-------------------|---|
| PageIndexChanged | -- |
| PageIndexChanging | Cancel, NewPageIndex |
| ItemCommand | CommandArgument, CommandName, CommandSource |
| ItemDeleted | AffectedRows, Exception, ExceptionHandled, Keys, Values |
| ItemDeleting | Cancel, Keys, RowIndex, Values |
| ItemUpdated | AffectedRows, Exception, ExceptionHandled, KeepInEditMode, Keys, NewValues, OldValues |
| ItemUpdating | Cancel, Keys, ItemIndex, NewValues, OldValues |
| ModeChanged | -- |
| ModeChanging | Cancel, CancelingEdit, NewMode |
| ItemCreated | -- |
| DataBinding | -- |
| DataBound | -- |

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- Web Form Data Control Binding Story
- Data Control Events
- What's Passed to e in Each Event?
- **What Can I Do in Each Event?**
- **Data Control Tips and Tricks**

GridView Events of Note

- **RowDataBound**
 - Use to modify data as it is being loaded into control
- **RowUpdating**
 - Use to manipulate data before row is updated in database, e.g., saving a timestamp field, complex validation.
- **RowDeleting**
 - Use to manipulate data before row is deleted from database, e.g., stopping delete.
- **RowUpdated**
 - Use to react to database update, e.g. refreshing another control on page or handling update exceptions.
- **RowDeleted**
 - Use to react to database delete, e.g. refreshing another control on page or handling delete exceptions

Details/Form View Events of Note (1 of 2)

DataBound and the “ing” Events

- **DataBound**
 - Use to modify data as it is being loaded into control, e.g., setting a default value for inserts
- **ItemUpdating**
 - Use to manipulate data before row is updated in database, e.g., saving a timestamp field, complex validation.
- **ItemInserting**
 - Use to manipulate data before row is inserted to database, e.g., saving a timestamp field.
- **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

- **ItemUpdated**
 - Use to react to database update, e.g. refreshing another control on page or handling update exceptions.
- **ItemInserted**
 - Use to react to database insert, e.g. refreshing another control on page or handling insert exceptions
- **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
 - Note: this is an event of the DataSource control, not the Data control!

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Database Used in Examples

- Examples use Northwind database in SQL Server Express
- Some examples work with stored procedures that you can create using this SQL script (included in download zip)
 - NWindSprocs.sql

1. How do I...

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

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

- Example: 1a. FormViewDefault.aspx

1. How do I...

- Display a default value of a control during an insert?
 - What about details view? How do you get at value?
 - Use templated control

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

- Example: 1b. DetailsViewDefault.aspx

2. How do I...

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

3. How do I...

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

```
<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="lblReportsTo" runat="server"
      Text='<%# Bind("ReportsToName") %>'></asp:Label>
  </ItemTemplate>
</asp:TemplateField>
```

Example: [EmployeeGridWithDropDown.aspx](#)

5. How do I...

- Create cascading drop-down controls within a FormView?
- Should be simple but it's not
 - Has to do with timing of databinding contexts

5. How do I...

- Create cascading drop-down controls within a FormView? (*continued*)
- Things you need to do
 - *Don't* set SelectedValue of 2nd dropdown declaratively
 - Write code to bind 2nd dropdown in its DataBound event
 - Write code to save SelectedValue during FormView's ItemInserting and ItemUpdating events
- Example: FVCascadingDropdowns.aspx and FVCascadingDropdownsAJAX.aspx

6. 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`

7. How do I...

- Not pass an identity column during an insert to the database?
 - Set **InsertVisible** property of control to false
- AND...After the insert, retrieve the newly inserted record, complete with identity column?
 - Use **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: FormViewExp.aspx

9. How do I...

- Filter a single data control by multiple controls?
 - Alter parameter collections programmatically

```
protected void txtCompany_TextChanged(object sender, EventArgs e)
{
    sdsCustomers.SelectParameters.Clear();
    sdsCustomers.SelectParameters.Add(new Parameter("CompanyName",
        TypeCode.String, txtCompany.Text + '%'));
}
```

- Example: Filtered.aspx

10. How do I...

- Get at Dataset behind Data control?
 - Use code like this:

```
DataSourceSelectArguments args = new DataSourceSelectArguments();  
DataView dv = (DataView)sdsAbstract.Select(args);
```

- For example, you might use this technique to pass a filtered Dataset off to Excel
- Example: [Filtered2Excel.aspx](#)

Some Data Control Debugging Suggestions

- **Updates *Not Working?***
 - Check DataSourceId attribute
 - Check DataKeyNames attribute
 - If using ObjectDataSource control, check OldValuesParameterFormatString
 - Defaults to original_{0}
- **Making Sense of Parameters**
 - Parameters are automatically inferred for update, delete, and insert statements
 - Use explicit parameters when you want to control data types or add additional params
 - Want to avoid passing back a field as a parameter?
 - Use InsertVisible property (for inserts)
 - Use ReadOnly property
 - Use Eval instead of Bind

ASP.NET vNext

- Things should get easier with MVC-style data binding in Web Forms
 - See 3 ScottGu's blog posts for preview
 - <http://weblogs.asp.net/scottgu/archive/2011/09/05/web-forms-model-binding-part-1-selecting-data-asp-net-vnext-series.aspx>
 - <http://weblogs.asp.net/scottgu/archive/2011/09/12/web-forms-model-binding-part-2-filtering-data-asp-net-vnext-series.aspx>
 - <http://weblogs.asp.net/scottgu/archive/2011/10/30/web-forms-model-binding-part-3-updating-and-validation-asp-net-4-5-series.aspx>
 - Or search for vNext on Scott's blog

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