

# Data Control Tips and Tricks

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# Paul Litwin

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    - *Access Cookbook, 2<sup>nd</sup> edition*
    - *Access 2002 Desktop/Enterprise Dev Handbook*
    - *AppDev SQL Server 2005 Reporting Services Course*

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  - [www.deeptraining.com/litwin](http://www.deeptraining.com/litwin)

# Agenda

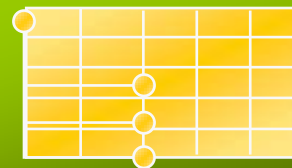
- Programming the Data & Data Source Controls
- Data Control Tips and Tricks (and a few Traps)
- New ListView Control

# Programming Data & Data Source Controls

# Data Binding in ASP.NET 2.0

## Data-bound Control

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



## Data Source Control

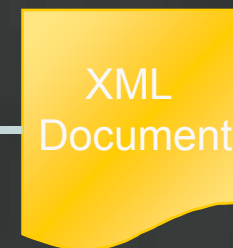
```
<asp:SqlDataSource  
  Id="MySource"  
  ConnectionString="ConnectionString" type="System.Data.SqlClient.SqlConnection, System.Data.SqlClient, Version=10.0.0.0, Culture=neutral, PublicKeyToken=b77a5c561934e089" />  
  SelectCommand="SELECT * FROM Table" />
```



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

# Tabular Data Controls

- **GridView** – tabular grid
- **DetailsView** – form that places fields in a table
  - uses BoundFields by default (with no ID property)
- **FormView** – form that uses a free-form template
  - uses template fields by default
  - more flexibility
  - Almost always a better choice than DetailsView
- **ListView** – very flexible control
  - can look like grid or form
  - new for VS 2008
  - more on this control later in presentation
- **All support editing, inserts (not GridView), pagination, template fields**

# Interesting Data Control Stuff (1 of 2)

- **BoundFields don't have IDs**
  - No easy way to refer to programmatically
- **TemplateFields**
  - Allows you to use any "<asp:" control
  - Eval provides read-only data-binding
  - Bind provides two-way data-binding
- **Updates not Working?**
  - Check DataSourceId attribute
  - Check DataKeyNames attribute
  - If using ObjectDataSource control, check OldValuesParameterFormatString
    - Defaults to original\_{0}

# Interesting Data Control Stuff (2 of 2)

- **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**

# GridView Events of Note

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

# Data Control How To's

# 1. 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

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

- Example: FormViewDefault.aspx

### 3. How do I...

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

## 4. 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**

## 5. 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...

- 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>
```

## 6. 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

## 6. How do I...

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

## 7. 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`

## 8. 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](#)

## 9. 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

## 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](#)

# 11. How do I...

- Use the ListView and DataPager controls?
- First, why is there another data control?
  - GridView, FormView, and DetailView only cover a limited universe
    - Useful for Grid or Form
    - GridView doesn't support inserts
  - Repeater and DataList limitations
    - Don't support pagination or sorting
    - Don't support grouping


# Enter ListView Control

- Most flexible of \*View controls
- More powerful than Repeater or DataList
- Supports templates, grouping, sorting, and paging (with DataPager control)

# Basic ListView

- **LayoutTemplate** defines container
  - itemPlaceholder control is replaced by ItemTemplate
  - Doesn't have to be a Placeholder control

```
<asp:ListView ID="lstMovies" DataSourceId="srcMovies"
runat="server">
  <LayoutTemplate>
    <asp:Placeholder ID="itemPlaceholder" runat="server" />
  </LayoutTemplate>
  <ItemTemplate>
    <%# Eval("Title") %>
  </ItemTemplate>
  <ItemSeparatorTemplate>
    <hr />
  </ItemSeparatorTemplate>
</asp:ListView>
```



# Very Simple Example

- **VerySimpleListView.aspx**

```
<asp:ListView
  ID="lstMovies"
  DataSourceId="srcMovies"
  runat="server">
  <LayoutTemplate>
    <asp:Placeholder id="itemPlaceholder" runat="server" />
  </LayoutTemplate>
  <ItemTemplate>
    <%# Eval("Title") %>
  </ItemTemplate>
  <ItemSeparatorTemplate>
    <hr />
  </ItemSeparatorTemplate>
</asp:ListView>
```

# Templates

- LayoutTemplate – container for entire control
- ItemTemplate – replaces itemPlaceholder for each data item
- AlternatingItemTemplate – every other item
- ItemSeparatorTemplate – separates items (and alternating items)
- GroupTemplate – container for groups
- GroupSeparatorTemplate – separator between groups
- EmptyItemTemplate – used for left over items in group
- EmptyDataTemplate – used when no data items
- SelectedItemTemplate – displayed for selected item
- EditItemTemplate – display for editing item
- InsertItemTemplate – display for inserting a new item

# Interesting ListView Attributes

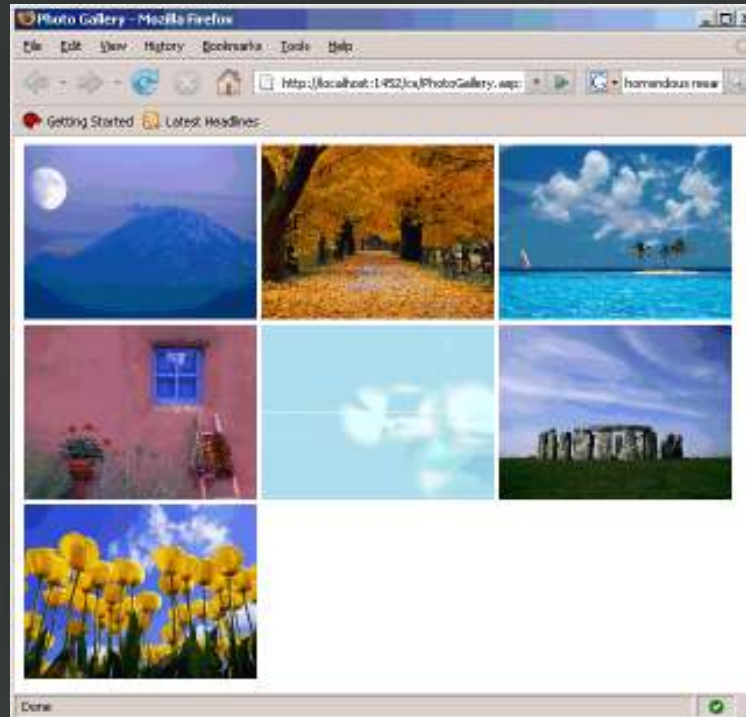
- ItemPlaceHolderId – defaults to itemPlaceholder
- GroupPlaceHolderId – defaults to groupPlaceholder
- GroupItemCount – # of items to display per group; defaults to 1
- InsertItemPosition – can be FirstItem, LastItem, or None

# Groups

- Adding a GroupTemplate allows you to create multiple columns
- Basic steps...
  1. Set GroupItemCount attribute of ListView to # of cols
  2. Insert 1<sup>st</sup> Placeholder ctrl in LayoutTemplate that points to groupPlaceholder control
  3. Insert 2<sup>nd</sup> Placeholder ctrl in GroupTemplate points to itemPlaceholder control

# Group Example

- PhotoGallery.aspx (from ASP.NET 3.5 Unleashed)



- PhotoGallery\_EmptyItem.aspx (version that uses EmptyItem template)

# Group Example

- **PhotoGallery.aspx**

```
<asp:ListView
  ID="lstPhotos" GroupItemCount="3" runat="server">
  <LayoutTemplate>
    <asp:Placeholder id="groupPlaceholder" runat="server" />
  </LayoutTemplate>
  <GroupTemplate>
    <div>
      <asp:Placeholder id="itemPlaceholder" runat="server" />
    </div>
  </GroupTemplate>
  <ItemTemplate>
    <asp:Image
      id="imgPhoto" ImageUrl='<%# Container.DataItem %>'
      Width="200px" runat="server" />
  </ItemTemplate>
</asp:ListView>
```

# Sorting

- Add button/link button controls to header with
  - `CommandName="Sort"`
  - `CommandArgument="field_name"`
- Example: `SortedListView.aspx`

# Editing Data

- Use `DataKeyNames` attribute
- Add `EditItemTemplate`, `InsertItemTemplate` as needed
- `InsertItemTemplate` always displayed
  - Control placement with `InsertItemPosition` attribute of `ListView`
  - Can be `FirstItem`, `LastItem`
- Add buttons with `CommandName` of
  - Edit – switch to `EditItemTemplate`
  - Delete – delete item
  - Update – save edited item
  - Insert – save new item
  - Cancel – cancel edits for edits/inserts
- Example: `EditMovies.aspx`

# Paging ListViews

- **DataPager** pages ListViews
- **Properties**
  - PageSize – number of items on page
  - PagedControlId – id of ListView to page
  - Fields – UI controls for paging
    - NextPreviousPagerField
    - NumericPagerField
    - TemplatePagerField – custom
  - StartRowIndex – index of first item to show
  - MaximumRows – max # of rows to retrieve from data source
  - TotalRowCount – total # of items from data source

# Pager Example

- PagedMovies.aspx
- and EditMovies.aspx

# Summary

- You've seen a number of tips and tricks top using the GridView, FormView, DetailsView, and ListView controls
- Download updated slides & samples from
  - [www.deeptraining.com/litwin](http://www.deeptraining.com/litwin)

Questions?

# Thank You!

- Please complete evaluation forms
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