Database Programming

Chapter 4 (Part 3)

What Are You Going To Learn?

- At the end of this lesson, you will be able to:
  - use data bound controls
  - apply data binding to data bound controls, such as DropDownList

Data Bound Controls and Data Source Controls

- A simple way is to use data source controls, which allow you to encapsulate data access in a control that you can configure with connection and query information.

▲ Data

- DataList
- DetailsView
- FormView
- GridView
- ListView
- Repeater

Namespace: System.Web.UI.WebControls

data bound controls

- AccessDataSource
- LinqDataSource
- ObjectDataSource
- SiteMapDataSource
- SqlDataSource
- XmlDataSource

data source controls

Data Source Control

- The built-in data source controls
  - SqlDataSource
  - AccessDataSource
  - ObjectDataSource
  - XmlDataSource
  - SiteMapDataSource
  - LinqDataSource
  - EntityDataSource (not in syllabus)

SqlDataSource Control

The "Sql" in the control name does not refer to Microsoft SQL Server, but rather the SQL syntax for querying **relational databases.**

- SqlDataSource control can be used to access not only Microsoft SQL Server databases, but Microsoft Access databases, Oracle databases and basically any OLE-DB or ODBC-compliant data store.

Data Bound Control

- render data as markup to the requesting browser.

- can bind to a data source control and automatically fetch data at the appropriate time in the page request lifecycle.

Data Bound Control (cont..)

- ASP.NET includes the data-bound controls described as following:-
  - GridView
  - DetailsView
  - FormView
  - DataList
  - Repeater
  - List controls
    - BulletedList, CheckBoxList, DropDownList, ListBox, and RadioButtonList controls.

Data Bound Control (cont..)

- Menu
  - Renders data in a hierarchical dynamic menu that can include submenus.
- AdRotator
  - Renders advertisements on a page as an image that users can click to go to a URL associated with the advertisement.
- TreeView
  - Renders data in a hierarchical tree of expandable nodes.

Overview of Data Binding

- Data Binding:
  - Process of dynamically assigning a value to a property of a control at run time.

- Example:
  - You can use data binding to bind the properties of a control to a data source such as the content of a Microsoft SQL Server Express table.

- Data binding enables you to control exactly when a value is bound to a property.

Binding a Server Control to a Data Source

- In this section, you will learn how to use data binding with GridView, DataList, Detailsview, FormView, Repeater, DropDownList, radioButtonList, and ListBox controls.

- You will use the SqlDataSource property to bind the items from SQL Server Express Edition.

Gridview

Control displays data as a **table** and provides the capability to sort columns, page through data, and edit or delete a single record.

GridView

- You can customize the appearance and behavior of the GridView control by doing the following:
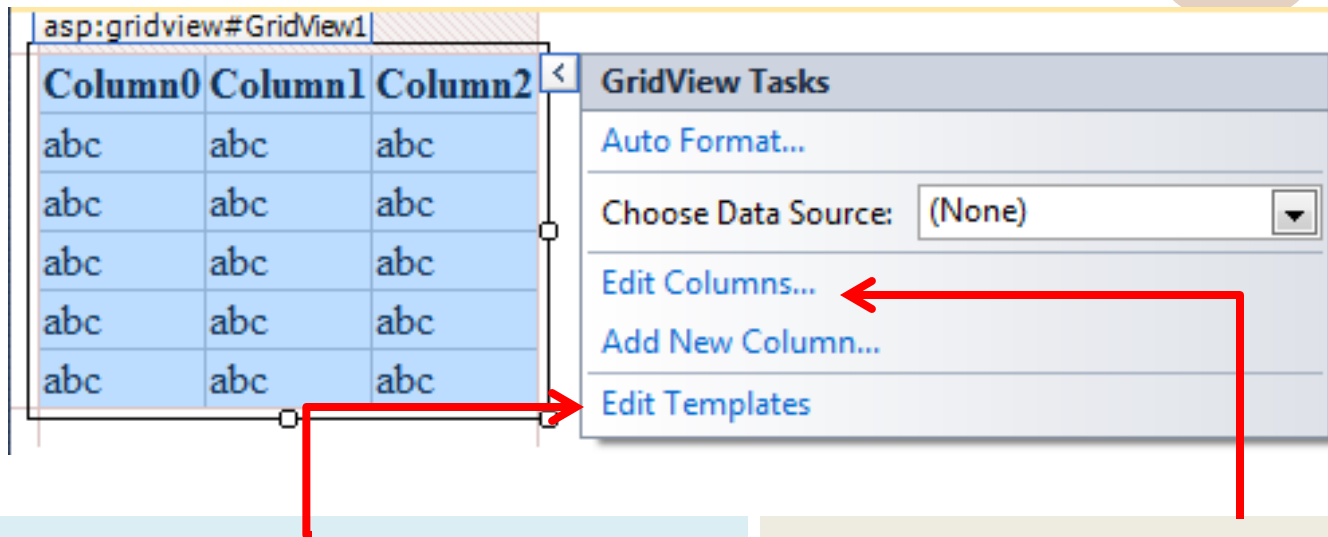
Utilizing templates to create custom user interface (UI) elements.

Specifying custom columns and styles.

Double-click the Gridview allows you adding your own code to the functionality of the GridView control by handling events.

DEMO

Binding to the GridView Control

DetailsView

My favorite products

ID	1
Name	**Search Control**
Description	Creates complex WHERE clauses to enable easy and optimized database search in ASP.NET applications.
Category	Components
Image	

Edit Delete New

1 2 3 4 5

Renders a single record at a time as a **table**

provides the capability to page through multiple records, as well as to insert, update, and delete records.

DetailsView

Often used in master-detail scenarios where the selected record in a master control such as a GridView control determines the record displayed by the DetailsView control.

Gridview

	Book Title
Select	But Is It User Friendly?
Select	Computer Phobic AND Non-Phobic Individuals: Behavior Variations
Select	**Cooking with Computers: Surreptitious Balance Sheets**
Select	Emotional Security: A New Algorithm
Select	Fifty Years in Buckingham Palace Kitchens
Select	Is Anger the Enemy?
Select	Life Without Fear
Select	Net Etiquette
Select	Onions, Leeks, and Garlic: Cooking Secrets of the Mediterranean
Select	Prolonged Data Deprivation: Four Case Studies

1 2

DetailsView

Author's Details	
First Name	Stearns
Last Name	MacFeather
Phone	415 354-7128
Address	44 Upland Hts.
City	Oakland
State	CA
Zip	94612

1 2

DetailsView
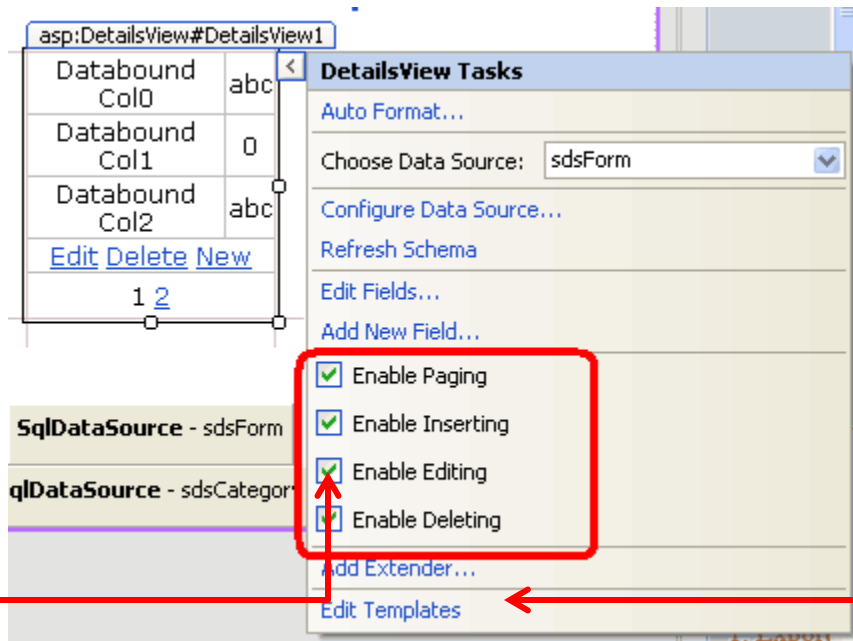
DetailsView offers additional customization through templates, which give you more control over the rendering of certain elements

Similar to Gridview, DetailsView offers you paging, inserting, editing and deleting command fields.

DetailsView

- You can control the appearance of the DetailsView

The DetailView control supports the following Fields

|	
BoundField	Displays the value of a data item as text
CheckBoxField	Displays the value of the data item as a check box
TemplateField	Customize the appearance of a data item
ImageField	Displays the value of a data item as an image
HyperlinkField	Displays the value of a data item as a link
ButtonField	Displays the value of a data item as a button, imagebutton, linkbutton
CommandField	Displays links for editing, deleting and selecting rows

DEMO

Binding to the DetailsView Control

FormView
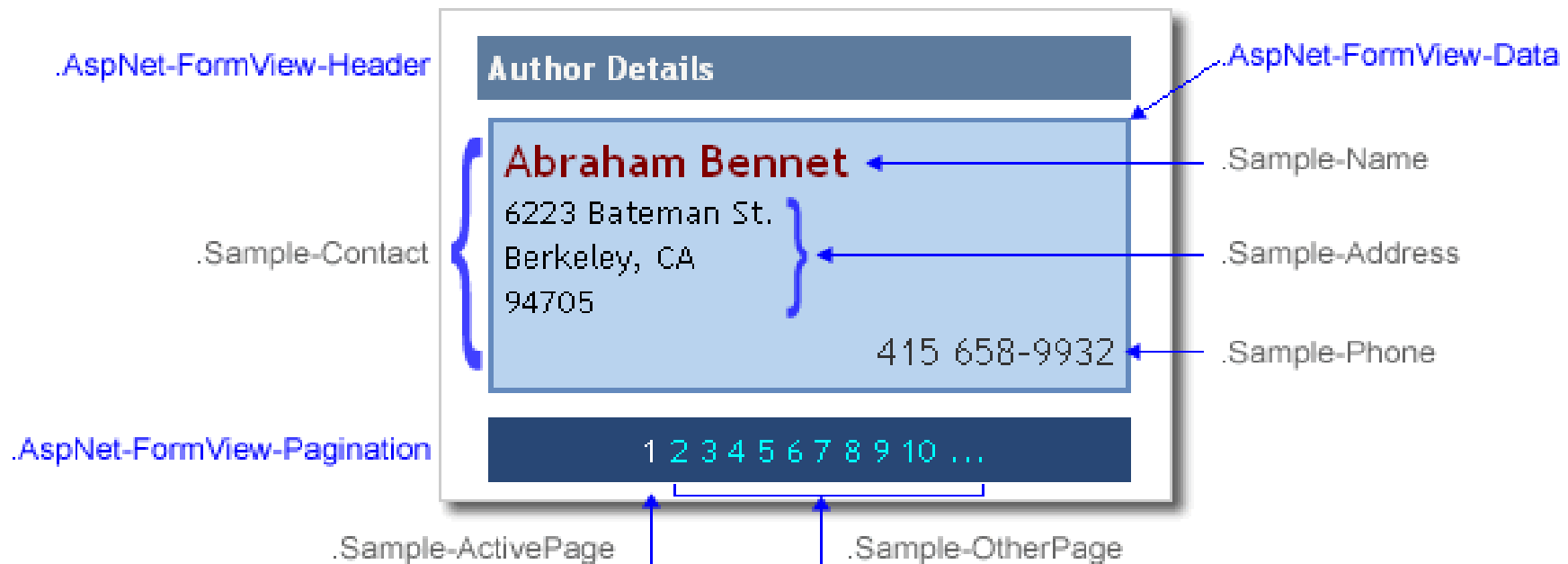
Similar to DetailsView, FormView renders a single record at a time from a data source

Different from DetailsView, FormView does not specify a pre-defined layout for displaying a record.

FormView
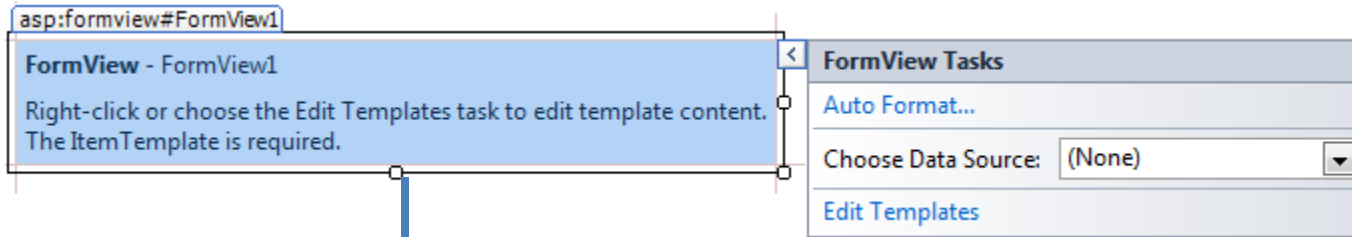
You can create templates that contain controls to display individual fields from the record

similar to the DetailsView, FormView povides the capability to page through multiple records, as well as to insert, update, and delete records,

DEMO

Binding to the FormView Control
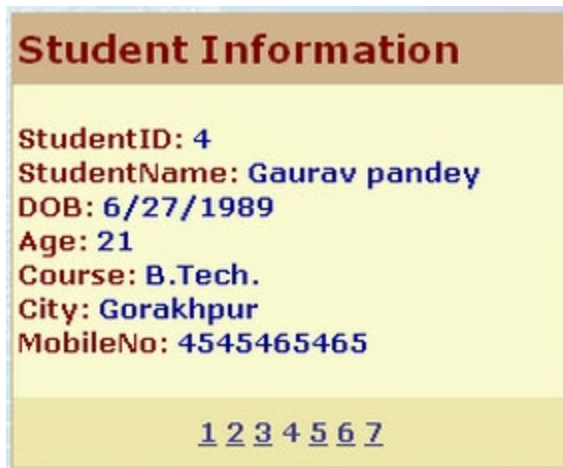
Data-bound Controls Comparisons

Control	Data Structure	Capabilities	Description and Primary Uses
GridView	Table	Read and edit	Separate column for each field Each field value in its own cell Display multiple records in a grid Edit existing records
DetailViews	Table or Tree	Read, edit, create	Display single records Default structure provided Edit existing records Create new records
FormView	Table or Tree	Read, edit, create	Display single records No default structure Edit existing records Create new records

Question

- Suggest the appropriate data bound control that can be used to create the following effects:
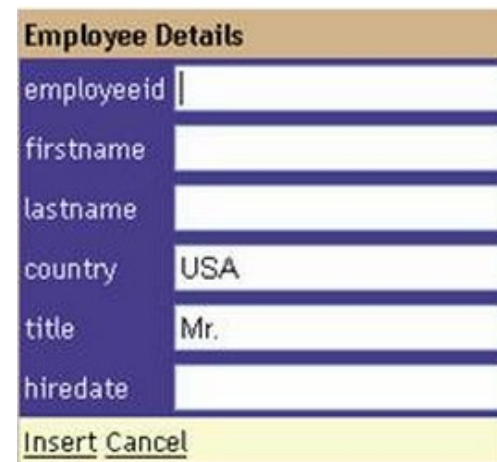
(a)

(b)

DataList

Employee Details — by Dotnetfox

DataList control explicitly places items in an HTML **table**

Renders data as table and enables you to display data records in different layouts, such as ordering them in columns or rows.

DataList

The EditCommand event is raised when the **Edit button** is clicked for an item in the DataList control
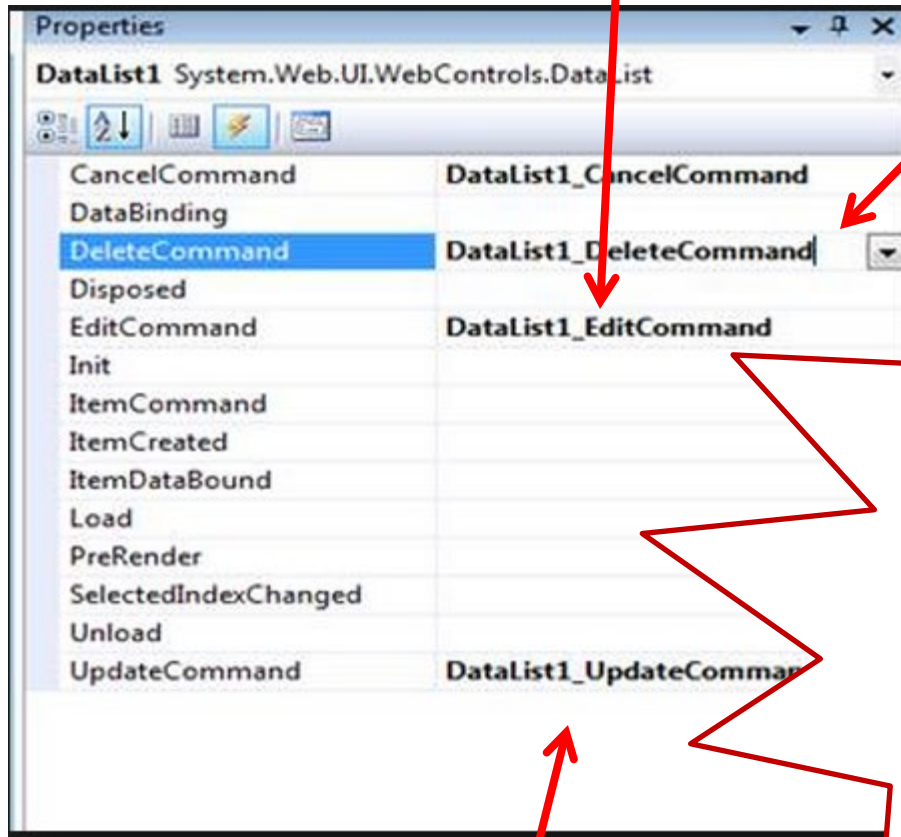
Datalist enables users to edit or delete a record in the table.

Properties	DataList1 System.Web.UI.WebControls.DataList
CancelCommand	DataList1_CancelCommand
DataBinding	
DeleteCommand	DataList1_DeleteCommand
Disposed	
EditCommand	DataList1_EditCommand
Init	
ItemCommand	
ItemCreated	
ItemDataBound	
Load	
PreRender	
SelectedIndexChanged	
Unload	
UpdateCommand	DataList1_UpdateCommand

However DataList control does not provide the capabilities for you to modify data; you must supply this code yourself.

The UpdateCommand event is raised when the **Update button** for an item is clicked

DataList
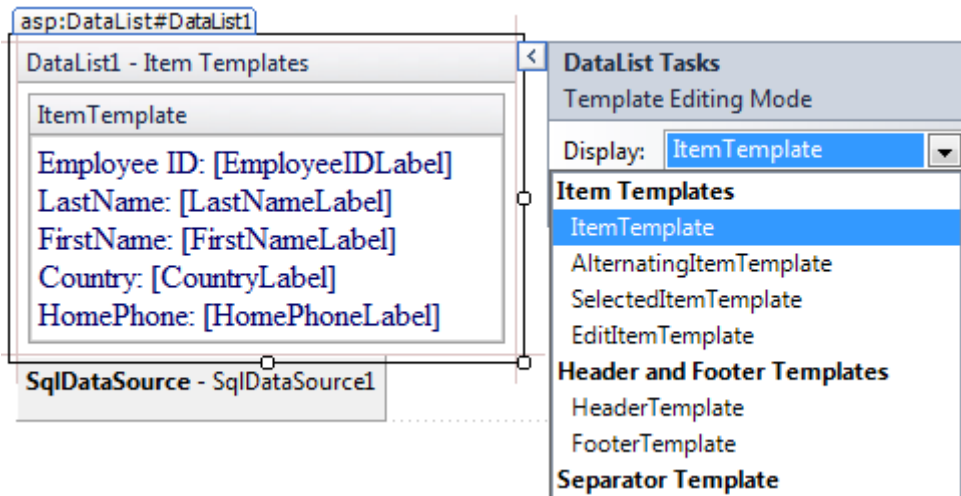
Features of the templates:

- Enable you to apply complicated formatting to each of the items displayed by a control.
- You can place any HTML tags that you please within a template.
- A template can also contain other controls and even inline ASP.Net code.
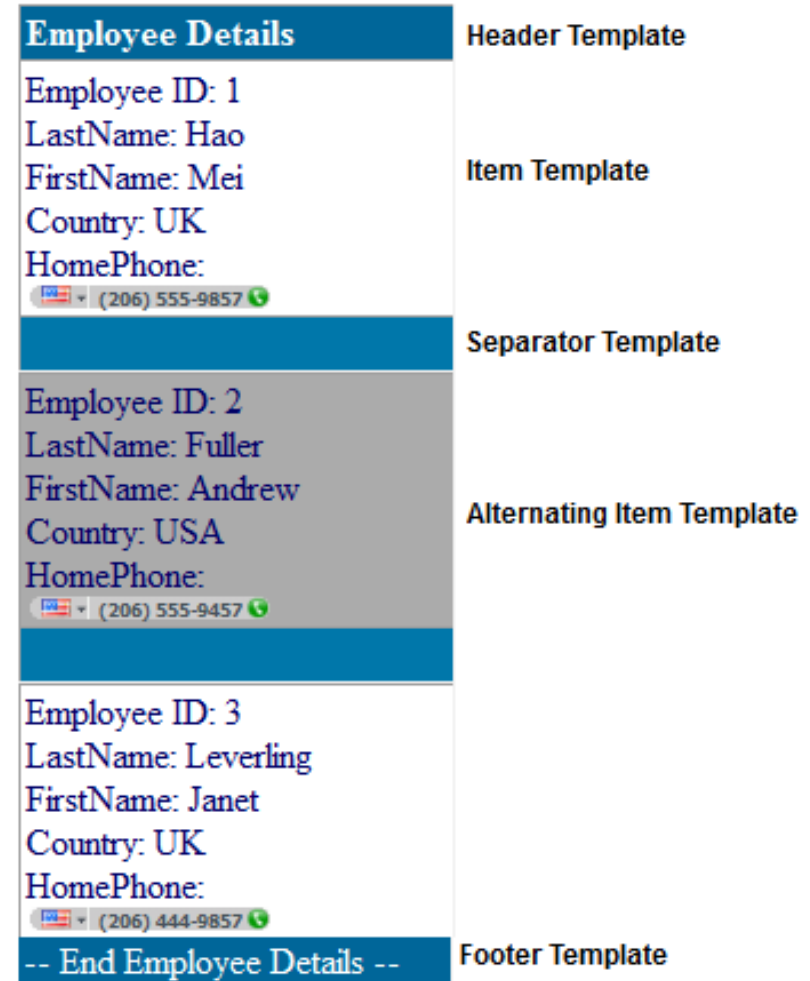
Templates

| Types	Description
HeaderTemplate /FooterTemplate	Contains the text and controls to render at the beginning and end o the list, respectively.
ItemTemplate	Contains the HTML elements and controls to render once for each data item in the data source.
AlternatingItemTemplate	Contains the HTML elements and controls to render once for every other data item in the data source. Typically, this template is used to create a different look for the alternating items, such as a different background color than the color that is specified in the ItemTemplate.
SeparatorTemplate	Contains the elements to render between each item. A typical example might be a line (using an <hr> element).

DEMO

Binding to the DataList Control

Question

- fill in the names of the templates

Product Information

Chai

Category: Beverages   Supplier: Exotic Liquids
Qty/Unit: 10 boxes x 20 bags   Price: $19.36

(a)

(b)

Chang

Category: Beverages   Supplier: Exotic Liquids
Qty/Unit: 24 - 12 oz bottles   Price: $19.00

(c)

Aniseed Syrup

Category: Condiments   Supplier: Exotic Liquids
Qty/Unit: 12 - 550 ml bottles   Price: $10.00

(d)

Chef Anton's Cajun Seasoning

Category: Condiments   Supplier: New Orleans Cajun Delights
Qty/Unit: 48 - 6 oz jars   Price: Please call for a price quote

Chef Anton's Gumbo Mix [DISCONTINUED]

Category: Condiments Supplier: New Orleans Cajun Delights
Qty/Unit: 36 boxes   Price: Please call for a price quote

Repeater

Titanic

Directed by: James Cameron
Box Office Totals: $600,000,000.00

Star Wars

Directed by: George Lucas
Box Office Totals: $500,000,000.00

Jurassic Park

Directed by: Steven Spielberg
Box Office Totals: $400,000,000.00

Jaws

Repeater control has no default look (while DataList places items in a table)

Repeater control allows you to define the layout of individual items on a Web page by using templates (for you to create your own custom layout to display any data)

Repeater

- Because the Repeater control has no default look, you can use it to create many kinds of lists, including the following:

Using Repeater Template

- Similar to DataList, all fields are displayed in one cell on a repeater (one cell = one record)

- You must use templates to control output formatting.

asp:repeater#Repeater1

Repeater - Repeater1

Switch to source view to edit the control's templates.

Repeater Tasks

Choose Data Source: (None)
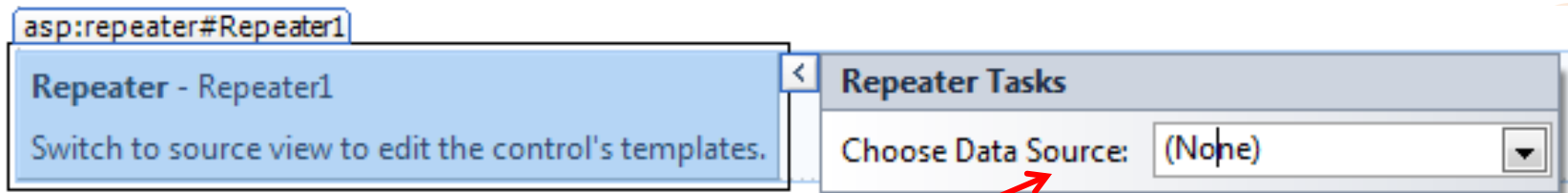
You may bind the data to a repeater from a DataSource control

Repeater

```
<asp:Repeater ID="Rpt1" runat="server" DataSourceID = "DataSource1" >
    <ItemTemplate>
        <%#DataBinder.Eval(Container.DataItem, "FirstName" ) %><br/>
    </ItemTemplate>
</asp:Repeater>
```

- ## Output

Critina
Artonda
Degama
Mia
Harry
Prace
Kudo
Dhabi

table field   custom formatting

DataBinder.Eval (object: container, string: expression)

For any of the list Web controls, such as GridView, DetailsView, DataList, or Repeater, **container** should be *Container.DataItem*. (If you are binding against the page, container should be Page)

DataBinder.Eval (object: container, string: expression)

Container:

- The object reference against which the expression is evaluated. This must be a valid object identifier in the page's specified language.

expression

- The navigation path from the container to the property value to be placed in the bound control property.
- This must be a string type of property or field names

Repeater

```
<asp:Repeater ID="Rpt1" runat="server" DataSourceID = "DataSource1" >
    <ItemTemplate>
        <%#Eval("LastName" )%>, <%#Eval("FirstName")%> <br/>
    </ItemTemplate>
</asp:Repeater>
```

table fields   custom formatting

• Output

Anne, Critina
Joseph, Artonda
Alfanso, Degama
Mama, Mia
Greece, Harry
William, Prace
Joe, Kudo
Abu, Dhabi

Alternatively, we can use Eval() instead of DataBinder.Eval()

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Binding to the Repeater Control

Binding to the List Controls – with DataSource control

SqlDataSource - SqlDataSource1

asp:DropDownList#DropDownList1

Databound ▼

DropDownList Tasks

Choose Data Source...

○ Databound   Configure Data Source...

Refresh Schema

☐ Databound   Edit Items...

☐ Enable AutoPostBack

Databound

Data Source Configuration Wizard

? ✕

Choose a Data Source

Select a data source:

SqlDataSource1 ▼

Select a data field to display in the DropDownList:

LastName ▼

Select a data field for the value of the DropDownList:

LastName ▼

Refresh Schema

OK   Cancel

you need to set the **DataTextField** and **DataValueField** property

Binding to the List Controls – with Code

- Alternatively, you can write code to bind the data to the list control.

```
//assume that connection and command have been established
dtrEmployees = cmdSelectEmployees.ExecuteReader();

CheckBoxList1.DataSource = dtrEmployees;
CheckBoxList1.DataTextField = "lastName";
//Use DataValueField if Value != Text
CheckBoxList1.DataValueField = " EmployeeID";
CheckBoxList1.DataBind();

…
```

Question

- Assuming part of the code is shown below. Discuss the problem if the page is loaded again (for the 2nd time).

```
void Page_Load(object sender, eventArgs e)
{
    string strCon = ConfigurationManager.ConfigurationSt…….;
    SqlConnection con = new SqlConnection(strCon);
    …
    dtrStates = cmdSelectState.ExecuteReader();
    ddlState.DataSource = dtrStates;
    ddlState.DataTextField = "state";
    ddlState.DataBind();
    con.Close();
    dtrStates.Close();
}
```

Binding to the List Controls – with Code

- What happen if neglecting the IsPostBack property:

  – Decrease the performance of the page because the records need to be retrieved from the database every time the page is opened. Retrieving records from a database is a resource-intensive task.

  – if a user selects an Employees from the DropDownList control, and you rebind the DropDownList to the database table, the user's selection is lost. Binding a DropDownList resets the SelectedIndex and SelectedItem properties of the control.

Data-bound Controls Comparison

Control	Data Structure	Capabilities	Description and Primary Uses
DropDownList, ListBox	Table or Tree	Read only	List of few fields
DataList	Table or Tree	Read and edit	All field in one cell One cell equals one record Display multiple records in a grid Create new record for GridView
Repeater	Table or Tree	Read only	All field in one cell One cell equal one record Display multiple records in a grid. Create new record for GridView display

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Next Week

MEMBERSHIP AND ROLE MANAGEMENT