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INFORMATION
TECHNOLOGY

FIT5192 Module 2

Internet Applications Development

Lecture 7B

Lecture Overview

1. Introduction

2. Data Source Controls

User interaction to retrieve data

Manipulating Data

3. GridView

Paging

Sorting

Master/Detail displays



Introduction

Data Source Controls (1)

The GridView control can be used with many of the Data Sources

Column Type	Description
-------------	-------------

BoundField	Displays the value of a field in a data source. This is the default column type of the GridView control.
------------	--

ButtonField	Displays a command button for each item in the GridView control. This enables you to create a column of custom button controls, such as an Add or Delete button.
-------------	--

CheckBoxField	Displays a check box for each item in the GridView control. This column field type is commonly used to display fields with a Boolean value.
---------------	---

Data Source Controls (2)

The GridView control can be used with many of the Data Sources

Column Type	Description
CommandField	Displays predefined command buttons to perform Select, Edit, or Delete operations
HyperlinkField	Displays the value of a field in a data source as a hyperlink. This column field type enables you to bind a second field to the hyperlink's URL
ImageField	Displays an image for each item in the GridView control
TemplateField	Displays user-defined content for each item in the GridView control according to a specified template. This column field type enables you to create a custom column

Database for examples (using AccessDataSource)

Field	Example
ISBN (Primary Key)	073440199X
book_title	Eyes in the Dark
book_author	Kim Dale
book_description	Another stunning lift-the-flap book Detailed fauna facts for parents and teachers are also included.
book_price	\$27.95
cover_image	
cover_url	pix/EyesDark.jpg
reviewed	(check box).

Formatting the Data Control

Formatting GridView:- Header

```
<asp:GridView id="gvBooks"
    runat="server"
    DataSourceID="lothianDS"
    CellPadding="3"
    Font-Names="arial"
    Font-Size="10pt"
    Width="600"
    HeaderStyle-Font-Size="10"
    HeaderStyle-BackColor="Bisque"
    HeaderStyle-ForeColor="Black"
    AlternatingRowStyle-BackColor="Cornsilk"
    AutoGenerateColumns="false">
```


Column Data Formatting

.....

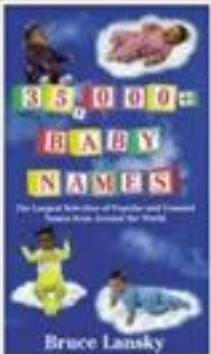

```
<asp:BoundField DataField="book_price"  
    HeaderText="Price"  
    DataFormatString="{0:C}"  
    ItemStyle-VerticalAlign="Top" />
```

```
<asp:BoundField DataField="cover_image"  
    HeaderText="Cover"  
    HTMLEncode="false"  
    ItemStyle-VerticalAlign="Top" />
```

.....

HTMLEncode

ISBN	Title	Author	Description	Price	Cover	Reviewed
0850917344	35,000 Baby Names	Bruce Lanskyz	If your baby's crying, you need a solution - NOW! Help is at hand with this extensive collection of practical and proven tips which respond to the particular needs of your child.	\$12.95		True
0734400799	A Bear Tale	Robert Ingpen	To slump or not to slump? That is Ted's question... Do you look wise when you slump? Join Ted on a journey exploring wisdom, the slumps of bears and the 'wiseness' of owls.	\$24.95		True
0850914647	Animal Book	Halold Holt	Enjoy pointing out and naming familiar objects with your child. Here are 40 animals from the Australian backyard, bush, farm and zoo that very young children will recognise and soon learn to name.	\$11.95		False

ISBN	Title	Author	Description	Price	Cover	Reviewed
0850917344	35,000 Baby Names	Bruce Lanskyz	If your baby's crying, you need a solution - NOW! Help is at hand with this extensive collection of practical and proven tips which respond to the particular needs of your child.	\$12.95		True
0734400799	A Bear Tale	Robert Ingpen	To slump or not to slump? That is Ted's question... Do you look wise when you slump? Join Ted on a journey exploring wisdom, the slumps of bears and the 'wiseness' of owls.	\$24.95		True

Using CSS for GridView look and feel

```
<asp:GridView id="gvBooks"  
    runat="server"  
    DataSourceID="lothianDS"  
    HeaderStyle-CssClass="booksHeader"  
    CssClass="booksGrid"  
    AlternatingRowStyle-CssClass="booksAlternate"  
    RowStyle-CssClass="booksRow"  
    AutoGenerateColumns="false">
```

Using CSS for Column look and feel

.....

```
<asp:BoundField DataField="book_price"  
    HeaderText="Price" DataFormatString="{0:C}"  
ItemStyle-CssClass="bookItem"/>  
<asp:BoundField DataField="cover_image"  
    HeaderText="Cover" HTMLEncode="false"  
ItemStyle-CssClass="bookItem" />
```

.....

User Interaction

ButtonFields (Part 1)

A ButtonField can be added to the Column Section of the Gridview

```
<Columns>
```

```
  <asp:ButtonField ButtonType="Button" Text="Display" ItemStyle-  
    CssClass="bookItem" />
```

```
  ....
```

```
</Columns>
```

An event handler for the **OnRowCommand** must be added

ButtonFields (Part 2)

An event handler for the **OnRowCommand** must be added

```
<asp:GridView id="gvBooks"  
  runat="server"  
  DataSourceID="lothianDS"  
  
  ....  
  OnRowCommand="displayData">
```

ButtonFields (Part 3)

Example Event handler

```
void displayData(object sender, GridViewCommandEventArgs e)
{
    lblDisplayBook.Text = "<table><tr><td>" +
gvBooks.Rows[Convert.ToInt32(e.CommandArgument)].Cells[6].Text +
" </td><td><b>Selected Book: </b><p /><b> " +
    gvBooks.Rows[Convert.ToInt32 (e.CommandArgument)].Cells[2].Text +
"</b> by <b>" + gvBooks.Rows[Convert.ToInt32(e.CommandArgument)].Cells[3].Text +
" </b><br /> " + gvBooks.Rows[Convert.ToInt32(e.CommandArgument)].Cells[4].Text +
"<br />Price: " +
    gvBooks.Rows[Convert.ToInt32(e.CommandArgument)].Cells[5].Text +    "</td></tr></table>";
}
```

The event Handler receives the data from the row that is clicked

User Interaction- Checkbox field

AccessDataSource Control

```
<asp:CheckBoxField DataField="reviewed"  
  ItemStyle-CssClass="bookItem" />
```

The GridView is able to work out that the records in the database that have this attribute set to "yes", should be checked.

.....

The displayed CheckBox is "greyed out" or disabled, meaning the user does not have the option to change it (by setting the ReadOnly property to "True").

If we were going to use our GridView for Editing data, this would have to be changed.

User Interaction- CommandField

GridView - CommandField

A CommandField is used for Adding/ Editing/Updating data.

Useful if the database only contains a few fields which can be easily viewed across the screen.

.....

```
<asp:CommandField ButtonType="Link" EditText="Edit"  
    ShowEditButton="true" ItemStyle-CssClass="bookItem" />
```

.....

Similarly a Delete button or an Insert button can be added

The GridView goes into "edit" mode when the Edit button is clicked and Update and Cancel options are automatically added for us.

User Interaction- HyperLinkField

Convert the "cover_image" BoundField to a HyperLinkField

"DataTextField" property indicates what will be displayed in the column
- in this case we are displaying the "cover_image".

```
<asp:HyperLinkField DataTextField="cover_image"  
    HeaderText="Cover" DataNavigateUrlFields="cover_url"  
    ItemStyle-CssClass="bookItem" />
```

HyperLinkField (Part 2)

For text Links, such as [Click Here](#) use the "Text" property.

The "DataNavigateUrlFields" attribute indicates where the HyperLink will navigate to when the link is clicked.

```
<asp:HyperLinkField DataTextField="ISBN" HeaderText="ISBN"  
    DataNavigateUrlFields="ISBN"  
    DataNavigateUrlFormatString="ShowBook.aspx?ISBN={0}"  
    ItemStyle-CssClass="bookItem" />
```

Dynamic Loading the SelectCommand

ShowBook.aspx

```
<%@ Page Language="C#" Debug="true" %>
<script language="c#" runat="server">
    void Page_Load(Object sender, EventArgs e)
    {
        lothianDS.SelectCommand = "SELECT * FROM books WHERE ISBN = "
            + Request.QueryString["ISBN"] + "";
        lvBook.DataSource = lothianDS;  lvBook.DataBind();
    }
</script>
<asp:accessdatasource runat="server" DataFile="lothiancompact.accdb"
    id="lothianDS" />
```

User Interaction to Retrieve Data

Requesting Data from Users

Find a book!

Please enter part, or all, of the book's ISBN (without any spaces).

Click to find book from its ISBN

or

Please enter part, or all, of the book's title.

Click to find book from its title

or

Please enter part, or all, of the author's name.

Click to find book from its author

Find a book!

Please enter part, or all, of the book's ISBN (without any spaces).

[Click to find book from its ISBN](#)

or

Please enter part, or all, of the book's title.

[Click to find book from its title](#)

or

Please enter part, or all, of the author's name.

[Click to find book from its author](#)

Title: Blue Fin

Author: Colin Thiele

ISBN: 0734401310

APN: 9780734401311



Twelve-year-old Steve Pascoe is nicknamed 'Snook' by everyone in Port Lincoln. He's thin and long-faced, like the fish he's named after. At school he's no good at sport and, at home, his father scorns him. Snook joins his father and fellow crewmen on a tuna-fishing expedition, when disaster strikes. It is up to Snook to save himself and his father from a desperate situation.

Price: 12.95 Pages: 160 195 x 125mm
Paperback

Event Handler for User input Button

```
<tr><td class="text">
```

```
  <asp:TextBox id="txtISBN" runat="server" width = "100"  
></asp:TextBox>
```

```
</td><td>
```

```
<asp:Button id="btnISBN" onclick="findBook"
```

```
runat="server" Text="Click to find book from its ISBN"  
CssClass="button"
```

```
CommandName="ISBN" />
```

```
</td></tr>
```

Reading From the Database

```
private void findBook(object sender, EventArgs e)
{
    Button btn = (Button)sender;
    switch (btn.CommandName)
    {
        case "ISBN": lothian.SelectCommand = "SELECT * FROM Books WHERE ISBN LIKE '%'" + txtISBN.Text.Trim(' ') + "%'";
            break;

        case "Title": lothian.SelectCommand = "SELECT * FROM Books WHERE book_title LIKE '%'" + txtTitle.Text.Trim(' ') + "%'";
            break;

        case "Author": lothian.SelectCommand = "SELECT * FROM Books WHERE book_author LIKE '%'" + txtAuthor.Text.Trim(' ') + "%'";
            break; }

    lv.DataSource = lothian; lv.DataBind(); }
```

ListViewControl (Part 1)

```
<asp:ListView id="lv" runat="server">
    <ItemTemplate>
        <table> <tr> <td>
            <asp:Image ID="imgCover" runat="server" ImageUrl='<%=#
Eval("cover_image", "pix/{0}") %>' CssClass="image" />
        </td>
        <td> <b>Title: <%=# Eval("book_title") %><br />
            Author: <%=# Eval("book_author") %><br />
            <%=# Eval("illustrator") %></b>
            ISBN: <%=# Eval("ISBN") %><br />
            APN: <%=# Eval("APN") %><p />
        </td>
    </tr> </table>
    </ItemTemplate>
</asp:ListView>
```

ListViewControl (Part 2)

<%# Eval("book_description") %><p />

Price: <%# Eval("book_price") %>

Pages: <%# Eval("number_pages") %>

<%# Eval("book_dimensions") %>

<%# Eval("book_cover") %><p />

</td> </tr>

<tr> <td colspan="2"><hr /></td>

</tr>

</table>

</ItemTemplate>

</asp:listView>

Data Sources- Adding Data

The DataSource examples have been configured with a select statement

Additionally

- INSERT, UPDATE and DELETE configuration can be added

Using VS Design View

AccessDataSource - BillBenDS

asp:GridView#GridView2

product_id	product_name	product_price	product_url
0	abc	0	abc
1	abc	0.1	abc
2	abc	0.2	abc
3	abc	0.3	abc
4	abc	0.4	abc

GridView Tasks

- Auto Format...
- Choose Data Source: BillBenDS
- Configure Data Source...
- Refresh Schema
- Edit Columns...
- Add New Column...
- ☐ Enable Paging
- ☐ Enable Sorting
- ☐ Enable Selection
- Edit Templates

Advanced SQL Generation Options ? X

Additional INSERT, UPDATE, and DELETE statements can be generated to update the data source.

☐ **Generate INSERT, UPDATE, and DELETE statements**
Generates INSERT, UPDATE, and DELETE statements based on your SELECT statement. You must have all primary key fields selected for this option to be enabled.

☐ **Use optimistic concurrency**
Modifies UPDATE and DELETE statements to detect whether the database has changed since the record was loaded into the DataSet. This helps prevent concurrency conflicts.

OK Cancel

Configuring the DataSource for input (Part 1)

```
<asp:accessdatasource runat="server"
```

```
    DataFile="billnben.mdb" id="BillNBenDS"
```

```
    DeleteCommand="DELETE FROM [product_details] WHERE [product_id] = ?"
```

```
    InsertCommand="INSERT INTO [product_details] ([product_id],  
        [product_name], [product_price], [product_url]) VALUES (?, ?, ?, ?)"
```

```
    SelectCommand="SELECT [product_id], [product_name],  
        [product_price], [product_url] FROM [product_details]"
```

```
    UpdateCommand="UPDATE [product_details] SET [product_name] = ?,  
        [product_price] = ?, [product_url] = ? WHERE [product_id] = ?">
```

Configuring the DataSource for input (Part 2)

```
<DeleteParameters> <asp:Parameter Name="product_id" Type="Int32" /> </DeleteParameters>
```

```
<InsertParameters>
```

```
  <asp:Parameter Name="product_id" Type="Int32" />
```

```
  <asp:Parameter Name="product_name" Type="String" />
```

```
  <asp:Parameter Name="product_price" Type="Decimal" />
```

```
  <asp:Parameter Name="product_url" Type="String" />
```

```
</InsertParameters>
```

```
<UpdateParameters>
```

```
  <asp:Parameter Name="product_name" Type="String" />
```

```
  <asp:Parameter Name="product_price" Type="Decimal" />
```

```
  <asp:Parameter Name="product_url" Type="String" />
```

```
  <asp:Parameter Name="product_id" Type="Int32" />
```

```
</UpdateParameters>
```

```
</asp:accessdatasource>
```

The Button with EventHandler defined:

.....

```
<asp:Button ID="btnInsert" runat="server" Text="Add Record"
    OnClick="AddRecord" />
```

.....

The EventHandler:

```
void AddRecord(object sender, EventArgs e)
{
    BillNBenDS.Insert();
}
```

Adding Data

Add New Plant

Product ID:

Product Name:

Product Price:

Add Record

product_id	product_name	product_price
1001	Fushia	9.95
1002	Nodding Heads	7.95
1003	Snowdrops	11.55
1004	Jump-ups	8.95
1005	Waterlilies	14.95
1006	Maybells	6.55
1007	Springups	9.95
1008	Hydrangea	11.55
1009	Tiger Lillies	14.95
1010	Tulips	17.45

FormView

Add New Record

Product ID:

Product Name:

Product Price:

product_id	product_name	product_price
1235	WTH	2
11111	234	400
2222	222222222222222222	222222222222222
33	3333333333333	3333333333333
123	123	123
12	123	123

Need to Specify:

<InsertItemTemplate>

Showing how the insert section will look.

Update data

Adding a select button to edit data

```
<asp:GridView ID="gvCatalogue" runat="server"  
    DataSourceID="BillNBenDS"  
    DataKeyNames="product_id"  
    AutoGenerateSelectButton="true"  
    CellPadding="3" Font-Names="arial" Font-Size="8pt"  
    HeaderStyle-BackColor="#dcdcdc"  
    HeaderStyle-ForeColor="blue">  
</asp:GridView>
```

One row of a table can be displayed with a DetailsView control

```
<asp:DetailsView ID="dtlAddProduct" runat="server"  
    DataSourceID="BillNBenDS2">  
</asp:DetailsView>
```

DetailsView Data source definition

```
<asp:accessdatasource runat="server" DataFile="billnben.mdb" id="BillNBenDS2"
  SelectCommand="SELECT [product_id], [product_name],
    [product_price] FROM [product_details] WHERE product_id = ?"
  UpdateCommand="UPDATE [product_details] SET [product_name] = ?, [product_price] =
    ? WHERE [product_id] = ?">
  <SelectParameters>
    <asp:ControlParameter ControlID="gvCatalogue" Name="product_id"
      PropertyName="SelectedValue" Type="String" />
  </SelectParameters>
  <UpdateParameters>
    <asp:Parameter Name="product_name" Type="String" /> <asp:Parameter
      Name="product_price" Type="Decimal" /> <asp:Parameter Name="product_id"
      Type="Int32" />
  </UpdateParameters>
```

Delete data

Add DeleteCommand to DataSource

```
DeleteCommand="DELETE FROM [product_details] WHERE  
product_id = ?">
```

Add delete parameters

```
<DeleteParameters>
```

```
<asp:Parameter Name="product_id" Type="Int32" />
```

```
</DeleteParameters>
```


Add delete Event Handler to the DetailsView

```
<asp:DetailsView ID="dtlAddProduct"
  runat="server" DataSourceID="BillNBenDS2"
  AutoGenerateEditButton="true"
  AutoGenerateDeleteButton="true"
  DataKeyNames="product_id"
  OnItemDeleted="refreshGridDelete"
  OnItemUpdated="refreshGridUpdate" >
</asp:DetailsView>
```

EventHandler for Updating DataView

```
void refreshGridDelete(object sender, DetailsViewDeletedEventArgs e)
{
    gvCatalogue.DataBind();
}
```

The DetailsView Control can Also Add Data

ID	1235
Name	WTH
Price	2
URL	product pic
Edit Delete New	

	ID	Name	Price	Image
Select	1235	WTH	2	
Select	11111	234	400	
Select	2222	22222222222222222222	2222222222222222	product pic
Select	33	333333333333	333333333333	product pic
Select	123	123	123	
Select	12	123	123	

Paging using GridView

Paging of the GridView can be added:

AllowPaging="true" PageSize="3"

Custom Paging Features can be added

```
<PagerStyle HorizontalAlign="Center" BackColor="Beige" />
```

```
<PagerSettings Position="TopAndBottom" FirstPageText="First"  
    LastPageText="Last" Mode="NextPreviousFirstLast" />
```

Custom Paging

First < > Last			
ID	Name	Price	Picture
1004	Jump-ups	\$8.95	
1005	Waterlilies	\$14.95	
1006	Maybells	\$6.55	
First < > Last			

Sorting in GridView

Add to GridView:

- `AllowSorting="true"`

In Columns add sort expression e.g.:

- `SortExpression="product_id"`

The Columns are links that can sort the data

Sorting Data

<u>ID</u>	<u>Name</u>	<u>Price</u>	<u>Picture</u>
1001	Fushia	\$9.95	
1002	Nodding Heads	\$7.95	
1003	Snowdrops	\$11.55	
1004	Jump-ups	\$8.95	

Master/Detail views

Master/Detail View

	Field Name	Data Type	Description
	CustID	AutoNumber	Unique Customer Identifier
	GivenName	Text	Customer given name
	FamilyName	Text	Customer family name
	Street	Text	Customer street
	Suburb	Text	Customer suburb
	State	Text	Customer state
	Postcode	Number	Customer postcode
	Email	Text	Customer email

File Edit View Insert Tools Window Help			
Field Name Data Type Description			
	OrderID	AutoNumber	Unique Order Identification
	CustID	Number	Customer who placed order
	OrderDate	Date/Time	Date order placed
	RequiredDate	Date/Time	Date custom requires order
	ShippedDate	Date/Time	Date order shipped to customer
	OrderTotal	Number	Total of order

Data in Tables

Microsoft Access - [Customers : Table]

	CustID	GivenName	FamilyName	Street	Suburb	State
+	1	Janet	Fraser	3 Street	Frankston	VIC
+	2	Des	Casey	5 Smith Street	Frankston	V
+	3	Bilbo	Baggins	21 Bag End	The Shire	C
+	4	Clark	Kent	15 Super Street	Smallville	N
▶	lumber)					

Record: 5 of 5

Unique Customer Identifier NUM

Microsoft Access - [Orders : Table]

	OrderID	CustID	OrderDate	RequiredDate	ShippedDate	OrderTotal
	1	1	15/02/2005	28/02/2005	21/02/2005	165.75
	2	1	16/02/2005	19/02/2005	19/02/2005	50
	3	1	25/04/2005	30/04/2005	27/04/2005	99.95
	4	1	13/05/2005	21/05/2005	19/05/2005	225
	5	1	13/05/2005	21/05/2005	19/05/2005	100
	6	1	1/06/2005	4/06/2005	4/06/2005	50.7
	7	2	10/02/2005	20/02/2005	18/02/2005	25.95
	8	2	12/02/2005	18/02/2005	15/02/2005	150.65
	9	2	10/05/2005	20/05/2005	19/05/2005	350
	10	2	6/06/2005	15/06/2005	12/06/2005	50.8
	11	4	1/04/2005	15/04/2005	10/04/2005	150.25
	12	4	10/04/2005	20/04/2005	20/04/2005	37.25
	13	4	15/04/2005	30/04/2005	18/05/2005	25.25
	14	4	5/05/2005	10/05/2005	10/05/2005	521.35
▶	Number)	0				0

Record: 15 of 15

Unique Order Identification NUM

Customer	Orders
Bilbo Baggins 21 Bag End The Shire, QLD 4087	
Des Casey 5 Smith Street Frankston, VIC 3199	
Janet Fraser 3 Street Frankston, VIC 3199	
Clark Kent 15 Super Street Smallville, NSW 2344	

Customer	Orders				
Bilbo Baggins 21 Bag End The Shire, QLD 4087	No records found for this customer				
Des Casey 5 Smith Street Frankston, VIC 3199	Order ID	OrderDate	Required Date	Shipped Date	Order Total
	7	10/02/2005	20/02/2005	18/02/2005	\$25.95
	8	12/02/2005	18/02/2005	15/02/2005	\$150.65
	9	10/05/2005	20/05/2005	19/05/2005	\$350.00
	10	6/06/2005	15/06/2005	12/06/2005	\$50.80
Janet Fraser 3 Street Frankston, VIC 3199	Order ID	OrderDate	Required Date	Shipped Date	Order Total
	1	15/02/2005	28/02/2005	21/02/2005	\$165.75
	2	16/02/2005	19/02/2005	19/02/2005	\$50.00
	3	25/04/2005	30/04/2005	27/04/2005	\$99.95
	4	13/05/2005	21/05/2005	19/05/2005	\$225.00
	5	13/05/2005	21/05/2005	19/05/2005	\$100.00
	6	1/06/2005	4/06/2005	4/06/2005	\$50.70
Clark Kent 15 Super Street Smallville, NSW 2344	Order ID	OrderDate	Required Date	Shipped Date	Order Total
	11	1/04/2005	15/04/2005	10/04/2005	\$150.25
	12	10/04/2005	20/04/2005	20/04/2005	\$37.25
	13	15/04/2005	30/04/2005	18/05/2005	\$25.25
	14	5/05/2005	10/05/2005	10/05/2005	\$521.35

Master/Detail View basic code structure

A **TemplateField** displays the Customer data in a particular format

A **DataKeyNames** value added to the GridView

CustID (Primary Key) field.

enable retrieval of the CustID value for a particular row without displaying the CustID value to the user.

Add a nested **GridView** inside a TemplateColumn

Specified formatting and DataField properties.

This GridView will show the Orders for each Customer row within the Parent DataGrid.



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Summary

1. Introduction

2. Data Source Controls

User interaction to retrieve data

Manipulating Data

3. GridView

Paging

Sorting

Master/Detail displays



What you will do in the Studio

Complete topic 9 exercises

Read ahead ASP examples from topic 10

Run using Visual Studio 2015/17





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Thanks and See you in the
Studio!