Working with ASP.NET Server Controls

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Server Controls

- Mixing plain HTML and server-side control in classic ASP or PHP
  - To create a text box with a message and current date and time:

```
<input type="text" value="Hello World, the time is <%=Time()%>" />
```

Difficult to write and manage pages.

Server Controls

- In ASP.NET, controls "**live**" on the server inside an ASPX page.
  1. Browser requests the page
  2. The server-side controls are <u>processed by</u> the ASP.NET engine

responsible for receiving and processing requests for ASPX pages

  1. Controls emit client-side HTML code
  2. <u>HTML code</u> ends up in the browser

Server Controls

- Instead of defining HTML controls in your pages directly, you define an ASP.NET server control:

Unique ID

```
<asp:TypeOfControl ID="ControlName" Runat="Server" />
```

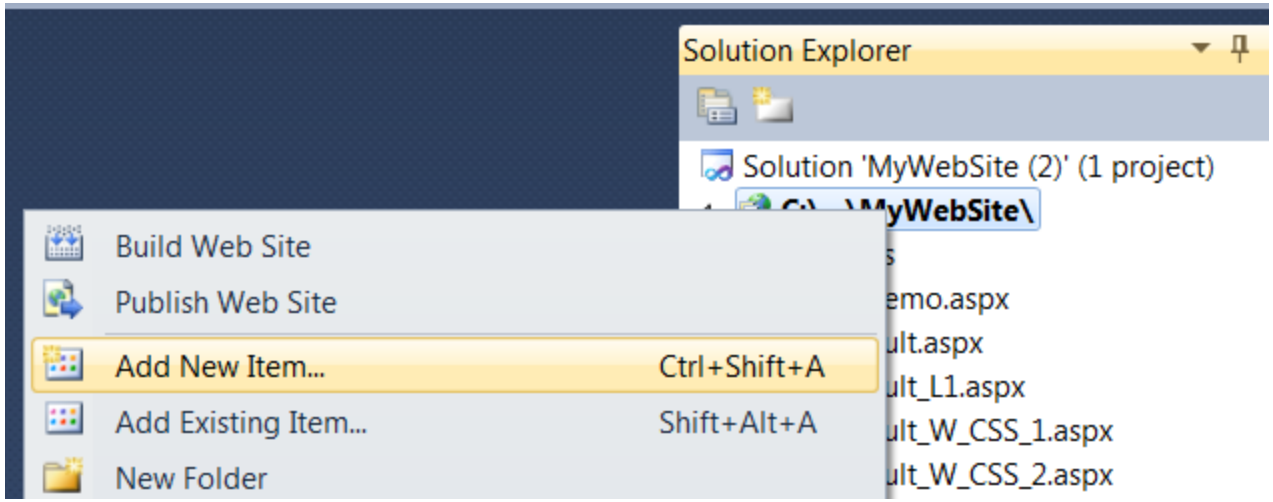
Prefix

This is a control that lives on the server.

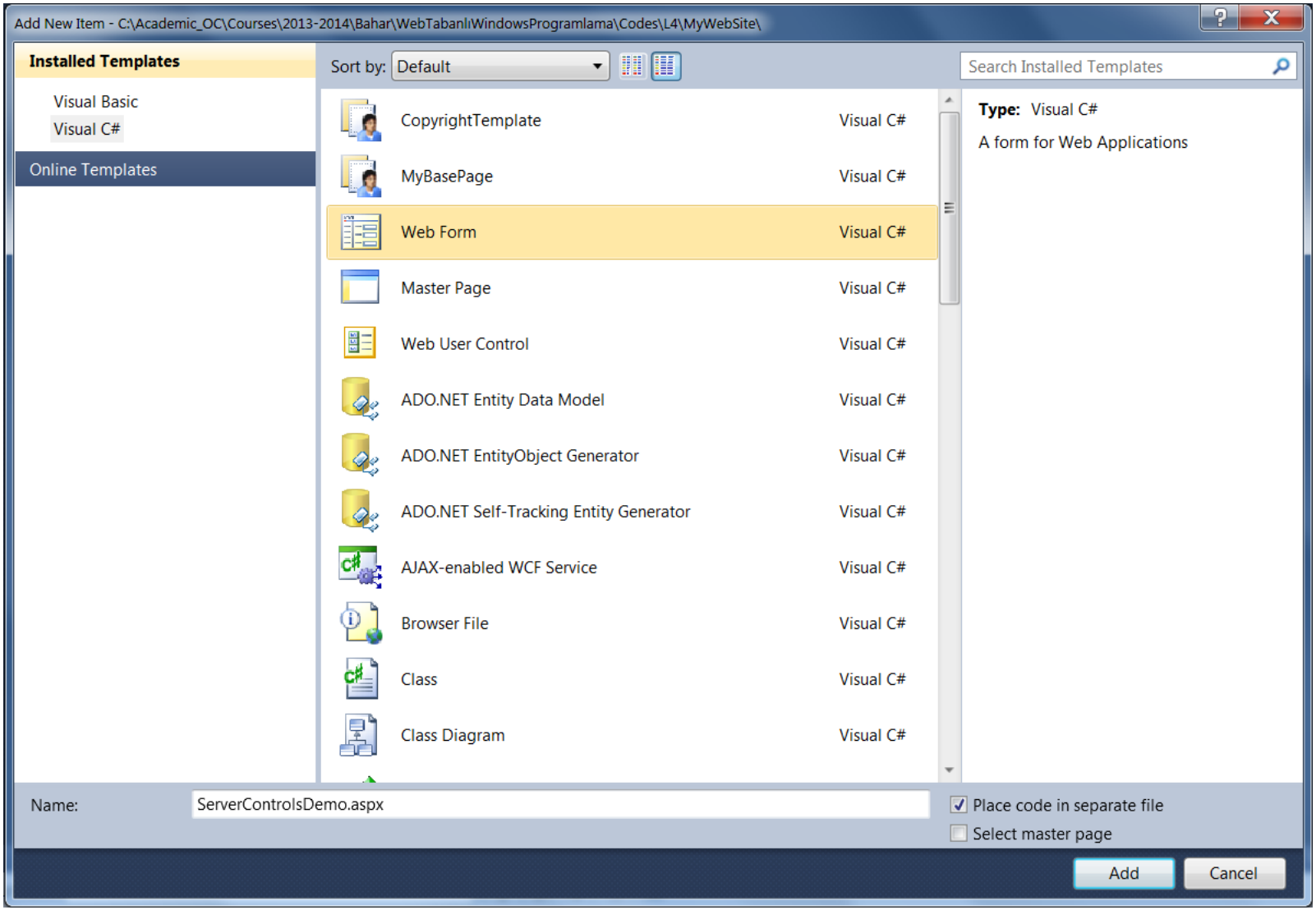
```
<asp:TextBox ID="Message" Runat="Server" />

<asp:TextBox ID="Message" Runat="Server"></asp:TextBox>
```

Example
Working with Server Controls

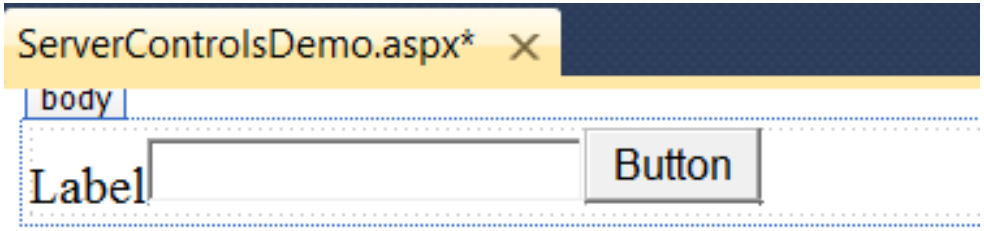


Example
Working with Server Controls



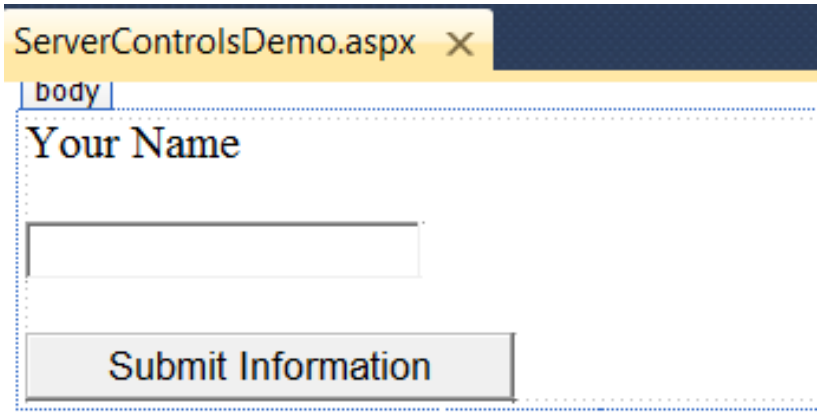
Example
Working with Server Controls

- In Design View:
  - Add **`Label`**, **`TextBox`** and a **`Button`**



Example
Working with Server Controls

- Properties:
  - **Label** → **Text : Your Name**
  - **Button** → **Text: Submit Information**
    ID: submitButton
  - **TextBox** → **ID: yourNameTextBox**



Example
Working with Server Controls

Double-click **`submitButton`**

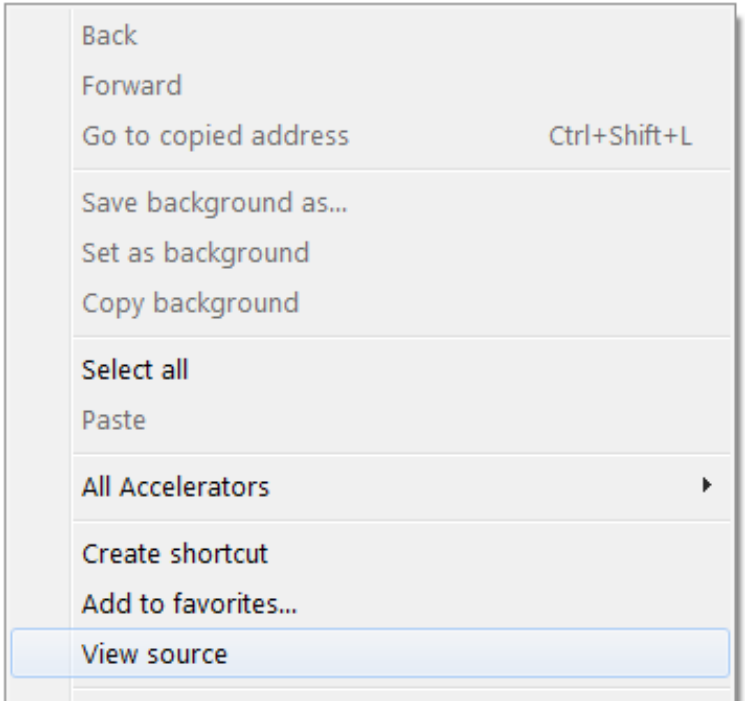
```
protected void submitButton_Click(object sender, EventArgs e)
{
    Label1.Text = "Your name is " + yourNameTextBox.Text;
}
```

Example
Working with Server Controls

- View in browser.
- Don’t click button!
- View Source

Your Name

Submit Information



Example
Working with Server Controls

```
<div>

    <span id="Label1">Your Name</span>
    <br />
    <br />
    <input name="yourNameTextBox" type="text" id="yourNameTextBox" />
    <br />
    <br />
    <input type="submit" name="submitButton" value="Submit Information" id="submitButton" />
</div>
```

Example
Working with Server Controls

- View Source

```
<div>

    <span id="Label1">Your name is Özgü</span>
    <br />
    <br />
    <input name="yourNameTextBox" type="text" value="Özgü" id="yourNameTextBox" />
    <br />
    <br />
    <input type="submit" name="submitButton" value="Submit Information" id="submitButton" />
</div>
```

Common Properties for All Controls

PROPERTY	DESCRIPTION
`AccessKey`	Enables you to set a key with which a control can be accessed at the client by pressing the associated letter.
`BackColor` `ForeColor`	Enables you to change the color of the background (`BackColor`) and text (`ForeColor`) of the control.

`BorderColor`
`BorderStyle`
`BorderWidth`
	Changes the border of the control in the browser. Each of these three ASP.NET properties maps directly to its CSS counterpart.

`CssClass`	Lets you define the HTML `class` attribute for the control in the browser. This class name then points to a CSS class you defined in the page or an external CSS file.
`Enabled`	Determines whether the user can interact with the control in the browser. For example, with a disabled text box (`Enabled="False"`) you cannot change its text.
`Font`	Enables you to define different font-related settings, such as `Font-Size`, `Font-Names`, and `Font-Bold`.
`Height` `Width`	Determines the height and width of the control in the browser.
`TabIndex`	Sets the client-side HTML `tabindex` attribute that determines the order in which users can move through the controls in the page by pressing the Tab key.
`ToolTip`	Enables you to set a tooltip for the control in the browser. This tooltip, rendered as a `title` attribute in the HTML, is shown when the user hovers the mouse over the relevant HTML element.
`Visible`	Determines whether or not the control is sent to the browser. You should really see this as a server-side visibility setting because an invisible control is never sent to the browser at all. This means it's quite different from the CSS `display` and `visibility` properties you saw in the previous chapter that hide the element at the client.

Common Properties for All Controls

```
<form id="form1" runat="server">
<div>
    <asp:TextBox ID="TextBox1" AccessKey="a" BackColor="Black" ForeColor="White" Font-Size="30px"
    BorderColor="Yellow" BorderStyle="Dashed" BorderWidth="4" CssClass="TextBox"
    Enabled="True" Height="40" Width="200" TabIndex="1" ToolTip="Hover text here"
    Visible="True" runat="server" Text="Hello World" ></asp:TextBox>
</div>
```

Hello World

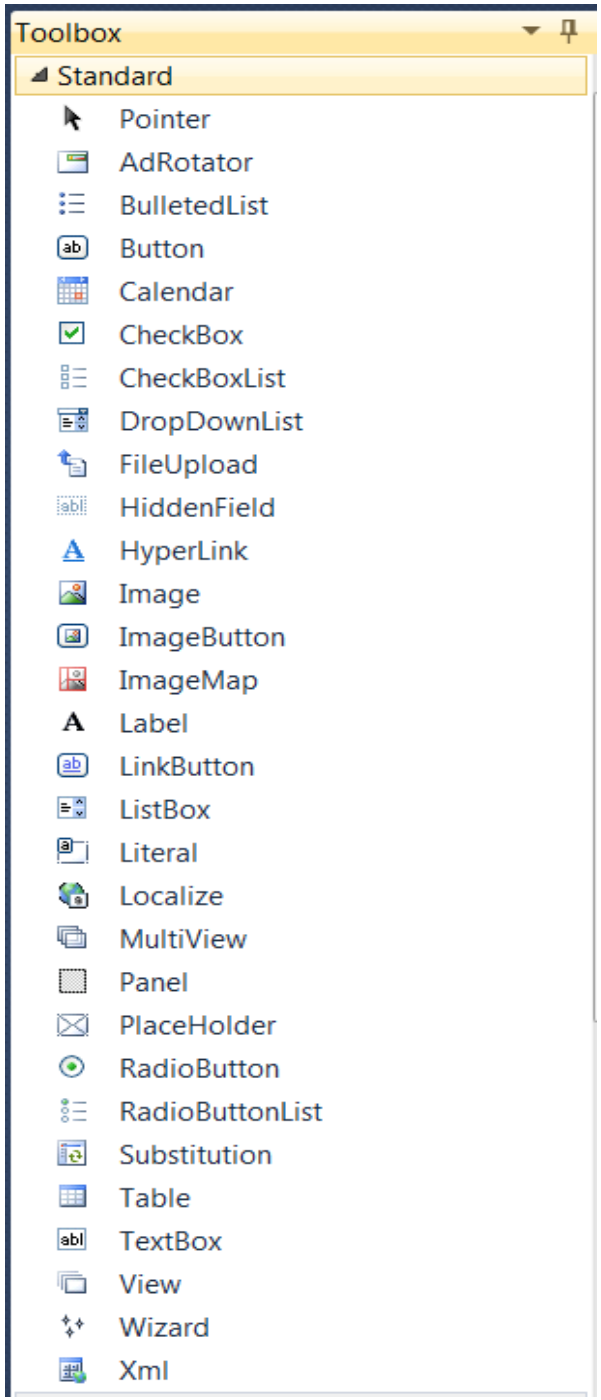
```
<div>
   <asp:TextBox ID="TextBox1"  runat="server" AccessKey="a" CssClass="TextBox" TabIndex="1"
      ToolTip="Hover text here" Text="Hello World"></asp:TextBox>
</div>
```

Styles/StylesTextbox.css* ✕ ServerCon

```
.TextBox
{
background-color: Black;
color: White;
font-size: 30px;
border-color: Yellow;
border-style: Dashed;
border-width: 4px;
height: 40px;
width: 200px;
}
```

Much easier to read, reuse and maintain.

Standard Controls



Simple Controls

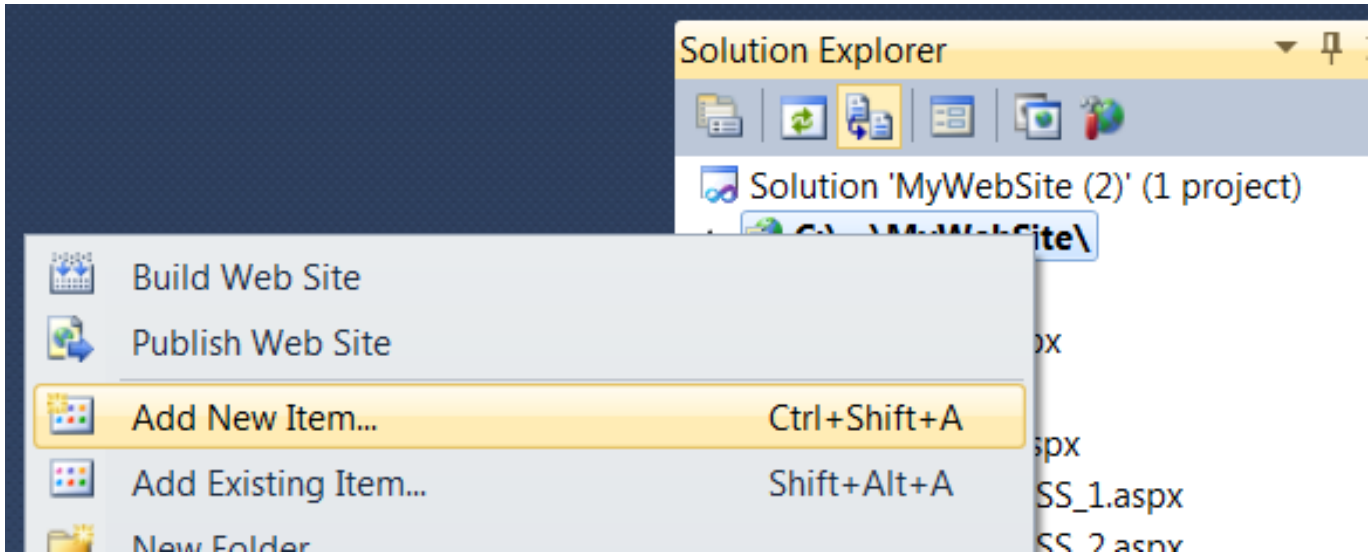
- The Toolbox contains a number of simple and straightforward controls, including:
  - **`TextBox`**,
  - **`Button`**,
  - **`Label`**,
  - **`HyperLink`**,
  - **`RadioButton`**, and
  - **`CheckBox`**.

List Controls

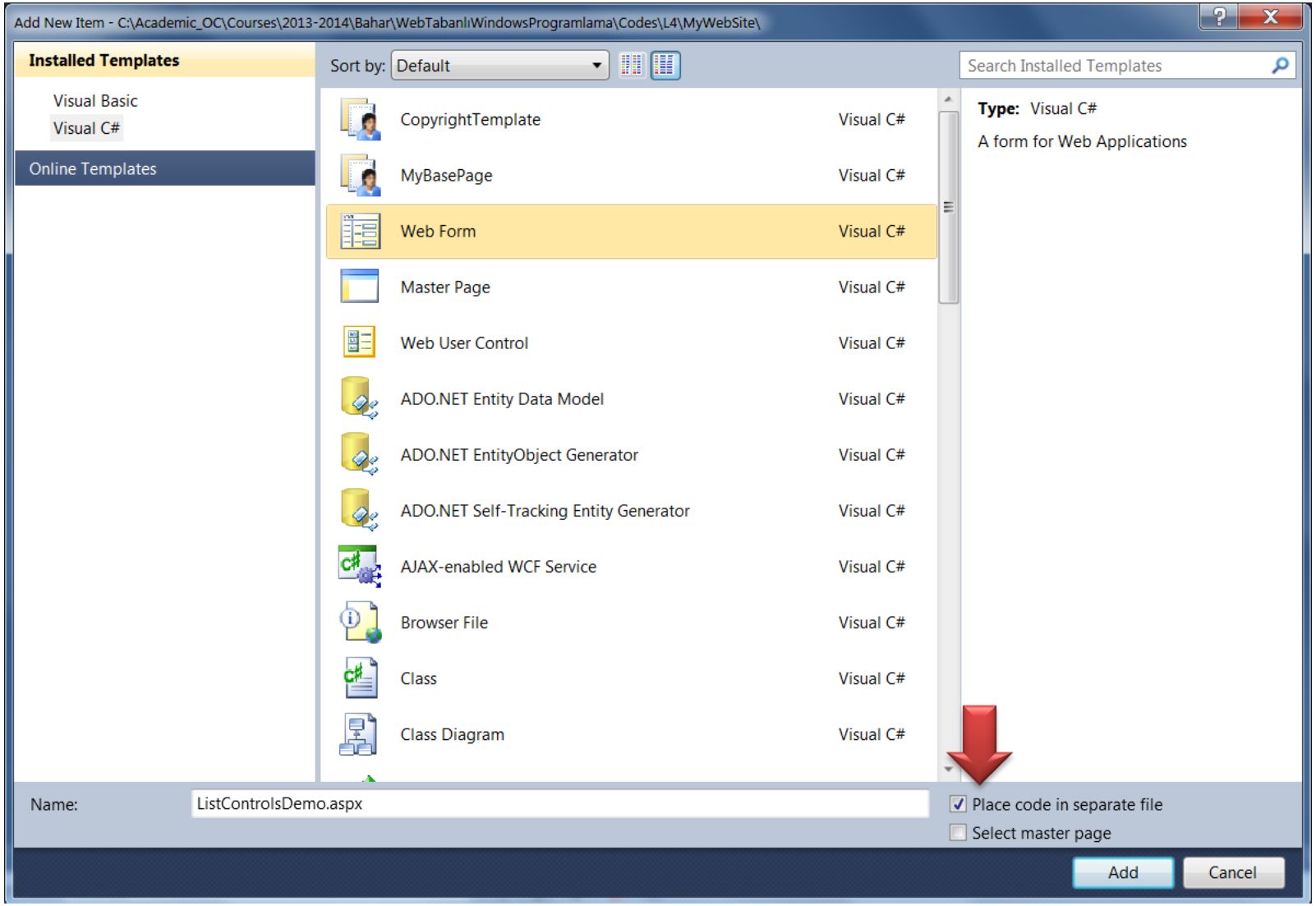
- The standard category also contains a number of controls that present themselves as lists in the browser.
- These controls include:
  - **`ListBox`**,
  - **`DropDownList`**,
  - **`CheckBoxList`**,
  - **`RadioButtonList`**, and
  - **`BulletedList`**.

Example
Working with List Controls

Add New Item in the Solution Explorer

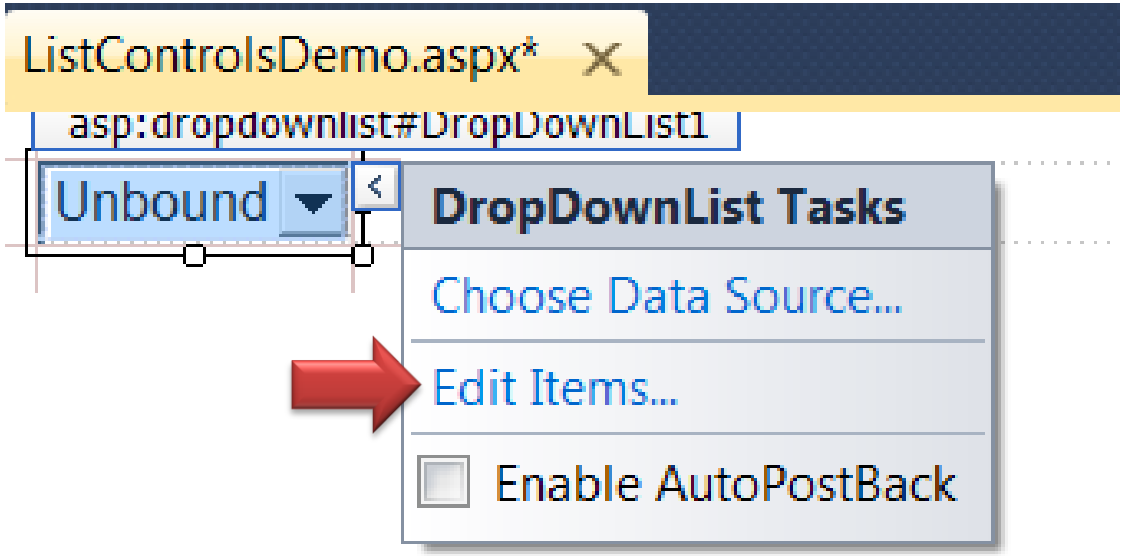


Example
Working with List Controls

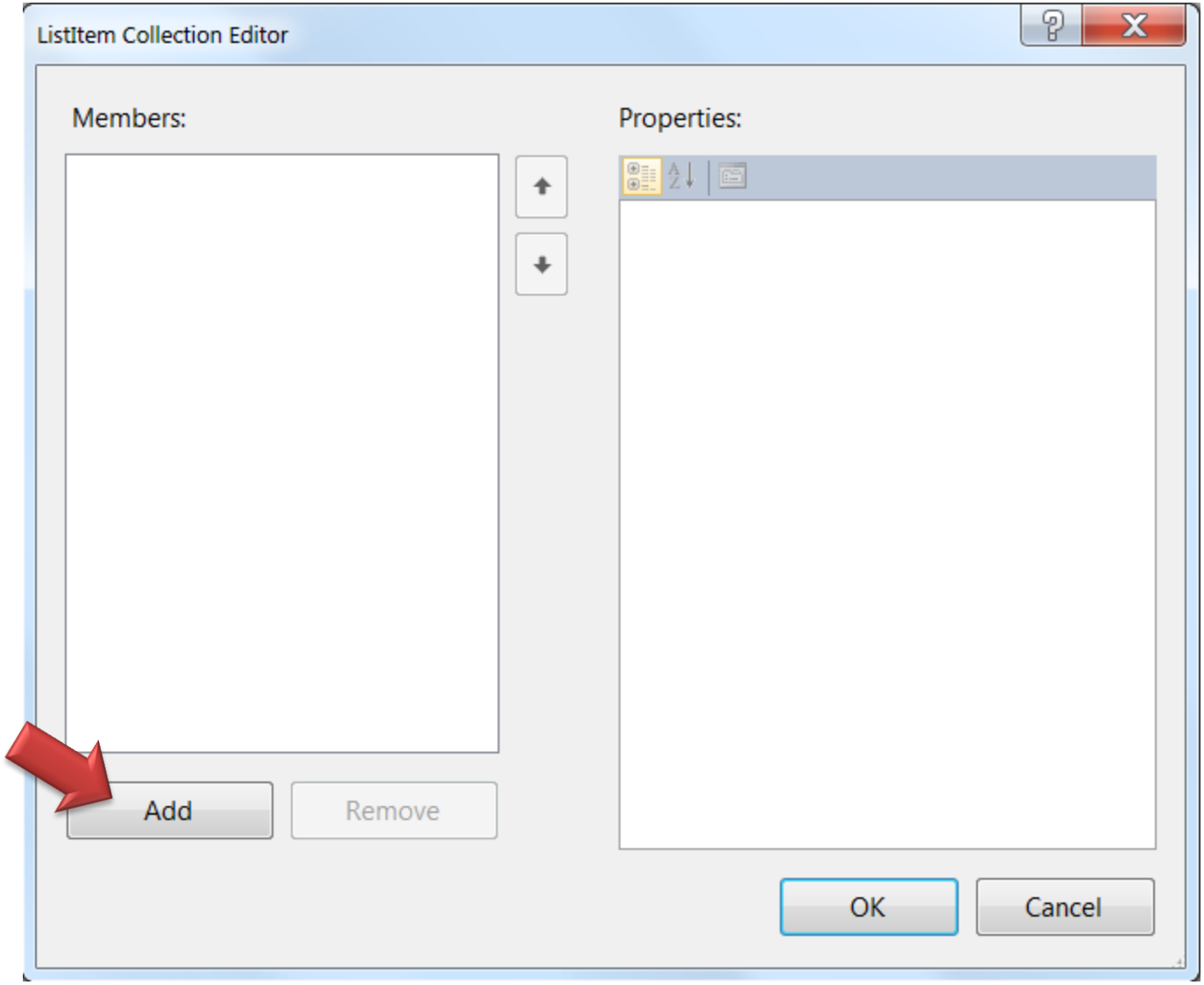


Example
Working with List Controls

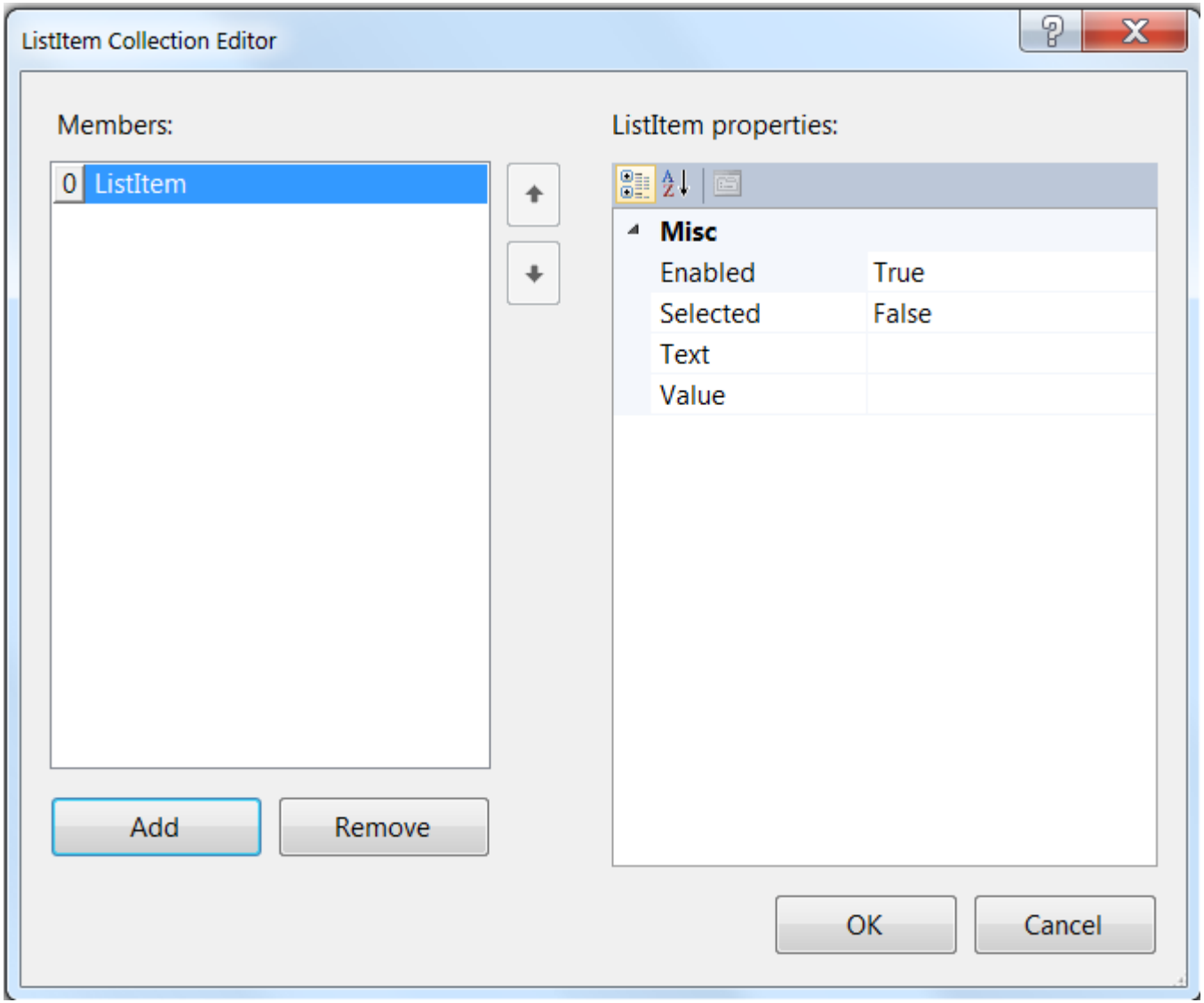
- In Design View:
  - Drag a **`DropDownList`** control



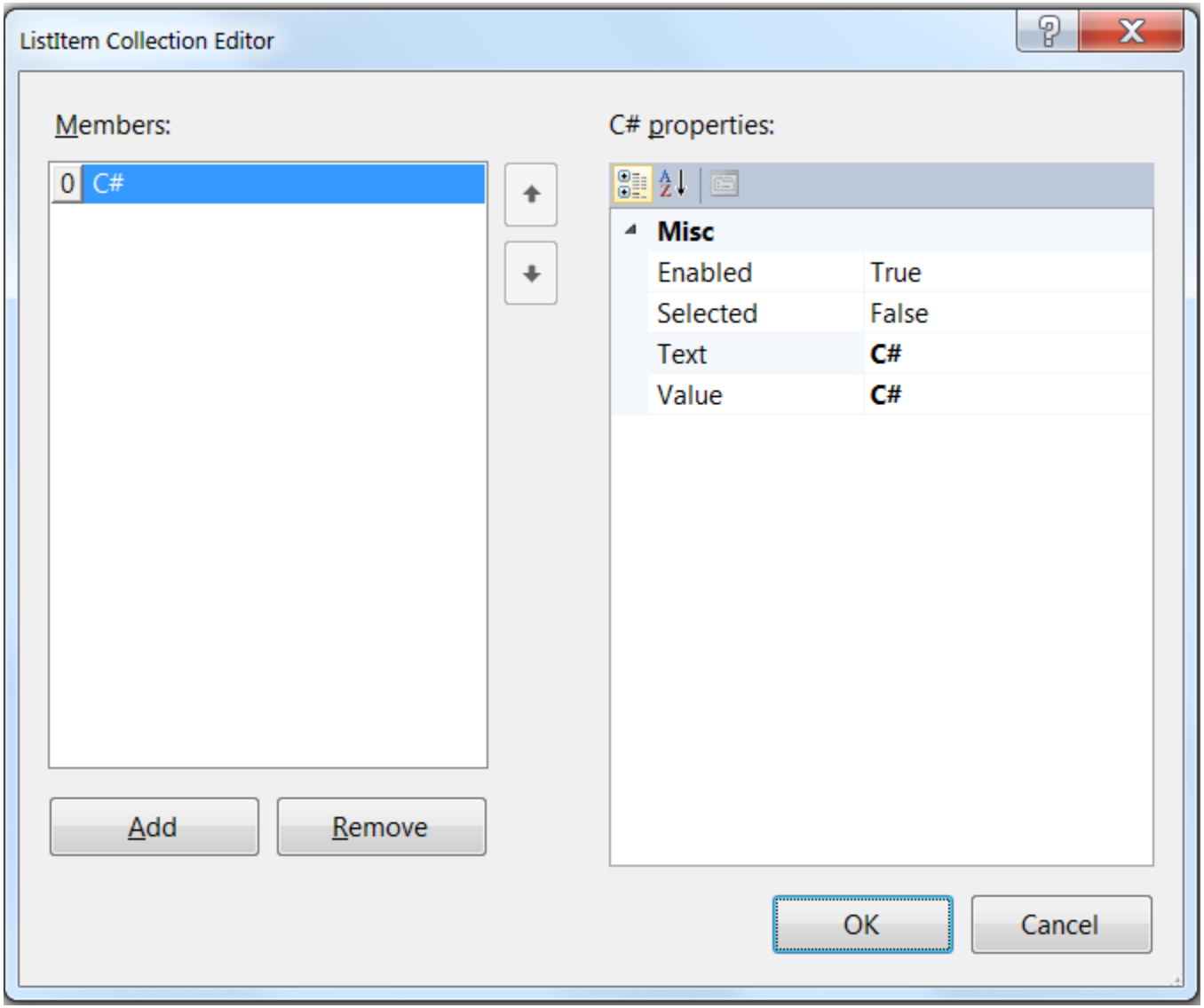
Example
Working with List Controls



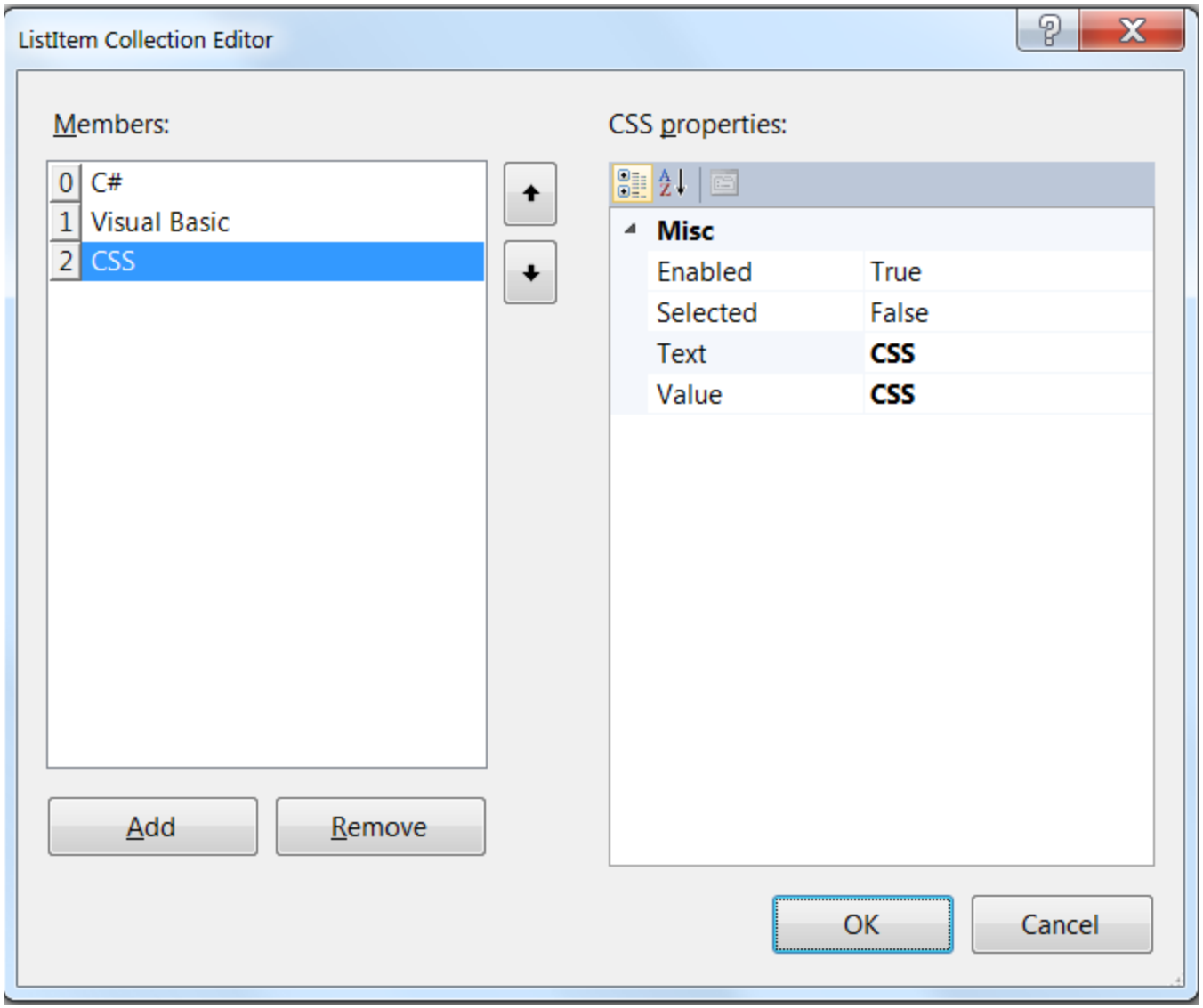
Example
Working with List Controls



Example
Working with List Controls



Repeat creating list items for **`Visual Basic`** and **`CSS`**



Example
Working with List Controls

- In Source View:

```
<asp:DropDownList ID="DropDownList1" runat="server">
    <asp:ListItem>C#</asp:ListItem>
    <asp:ListItem>Visual Basic</asp:ListItem>
    <asp:ListItem>CSS</asp:ListItem>
</asp:DropDownList>
```

- Drag a **`CheckBoxList`** control after the **`DropDownList`** control.

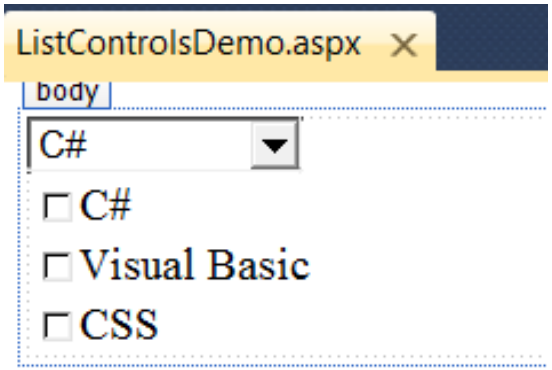
```
<asp:DropDownList ID="DropDownList1" runat="server">
    <asp:ListItem>C#</asp:ListItem>
    <asp:ListItem>Visual Basic</asp:ListItem>
    <asp:ListItem>CSS</asp:ListItem>
</asp:DropDownList>
<asp:CheckBoxList ID="CheckBoxList1" runat="server">
</asp:CheckBoxList>
```

Example
Working with List Controls

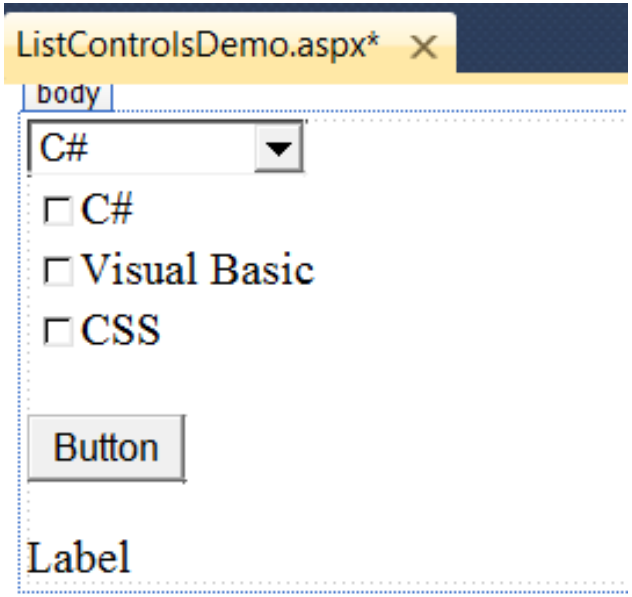
- Copy the three **`<asp:ListItem>`** elements from the **`DropDownList`** you created and paste them between the opening and closing tags of the **`CheckBoxList`**.

```
<asp:CheckBoxList ID="CheckBoxList1" runat="server">
    <asp:ListItem>C#</asp:ListItem>
    <asp:ListItem>Visual Basic</asp:ListItem>
    <asp:ListItem>CSS</asp:ListItem>
</asp:CheckBoxList>
```

- In Design View:



- Drag a **`Button`** and a **`Label`** after the **`CheckBoxList`** control



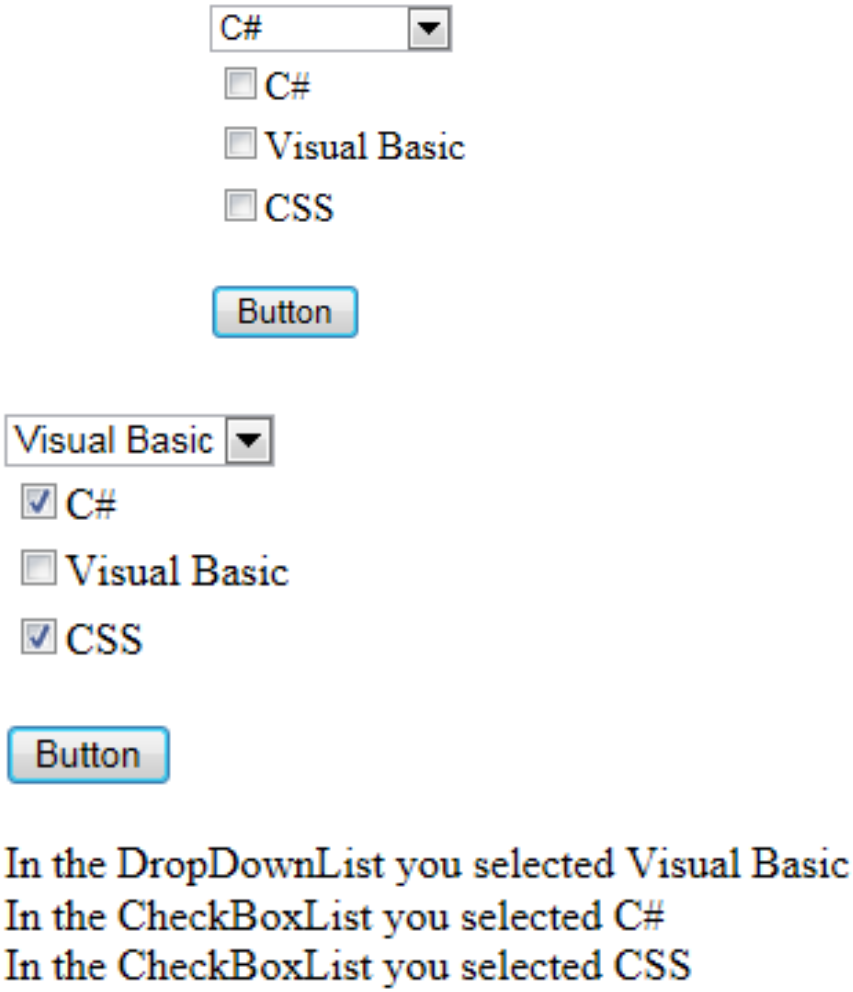
Example
Working with List Controls

- Clear **`Label`** text
- Double-click the **`Button`**

```
protected void Button1_Click(object sender, EventArgs e)
{
    Label1.Text = "In the DropDownList you selected " + DropDownList1.SelectedValue + "<br />";
    foreach (ListItem item in CheckBoxList1.Items)
    {
        if (item.Selected == true)
        {
            Label1.Text += "In the CheckBoxList you selected " + item.Value + "<br />";
        }
    }
}
```

Example
Working with List Controls

- View in Browser

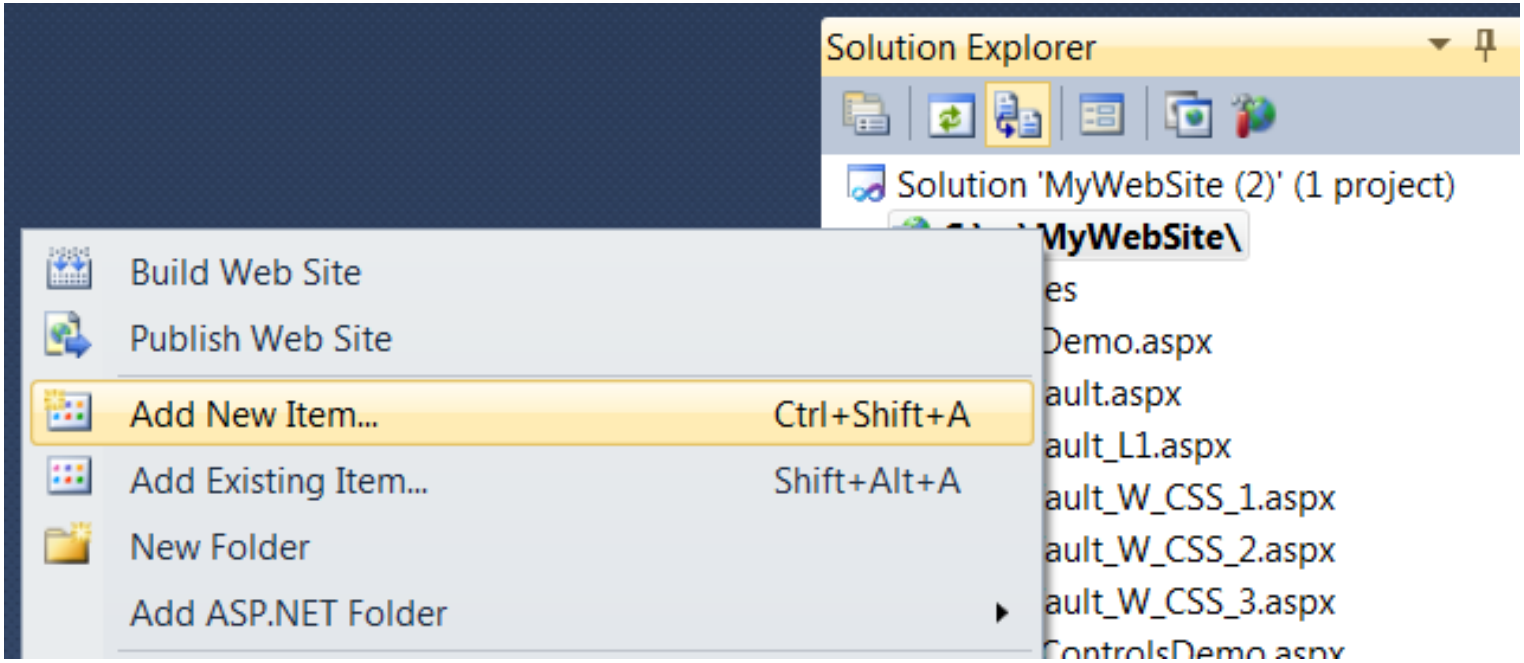


Container Controls

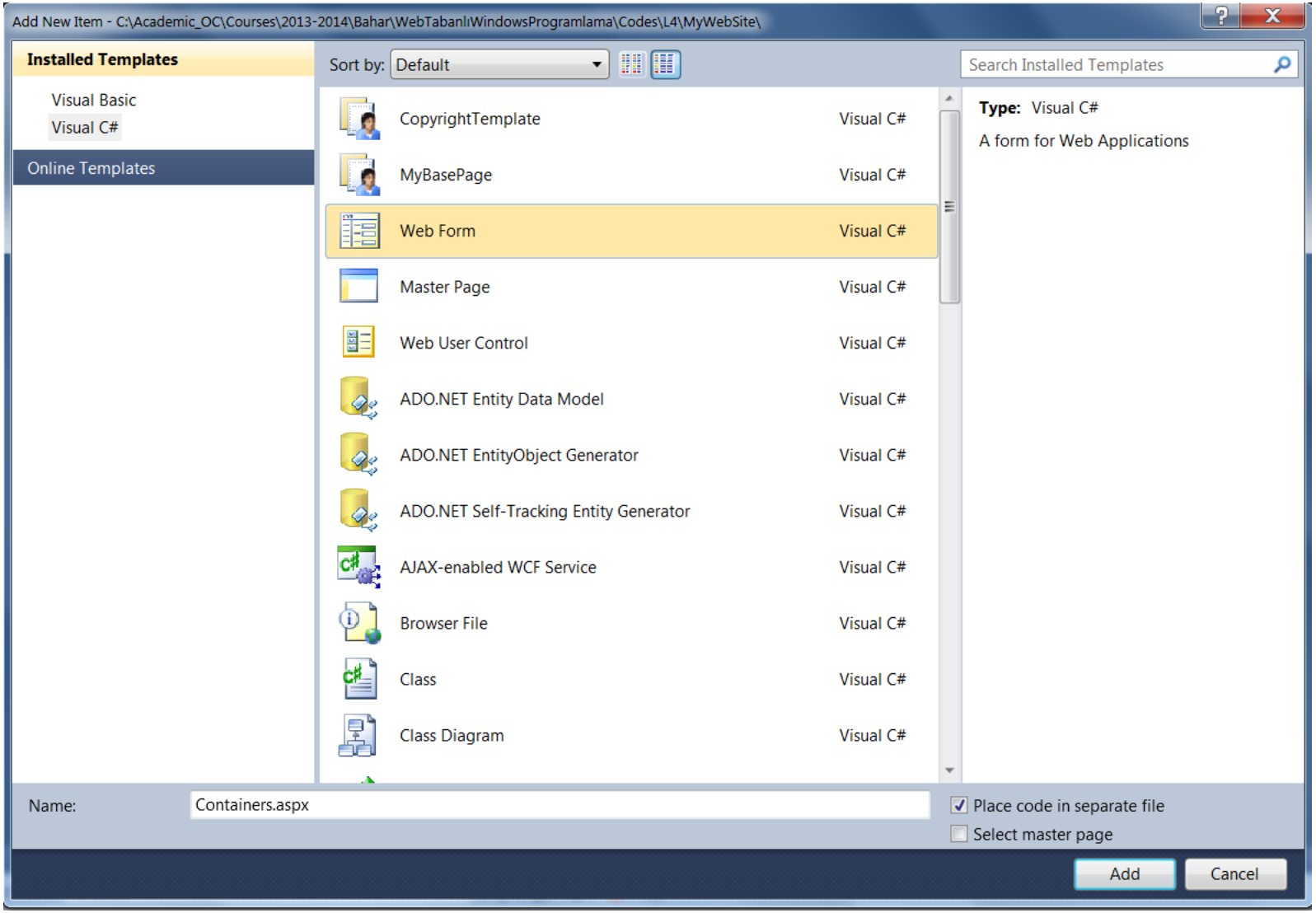
- It's desirable to have the ability to group related content and controls:
  - **`Panel`**
  - **`PlaceHolder`**
  - **`MultiView`**
  - **`Wizard`**

Example
Panel Control

- Add New Item in the Solution Explorer

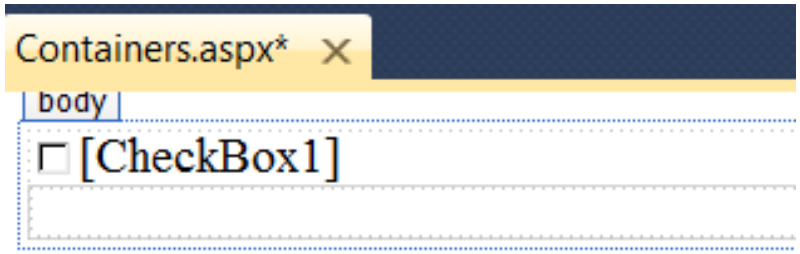


Example
Panel Control



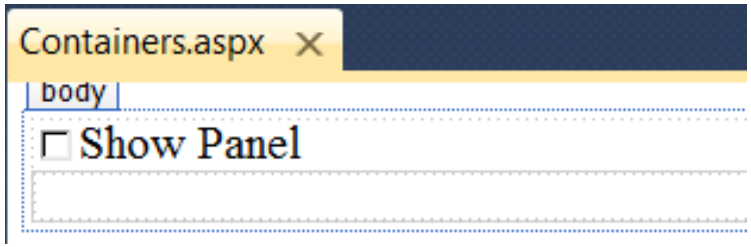
Example
Panel Control

- Drag a **`CheckBox`** and a **`Panel`**

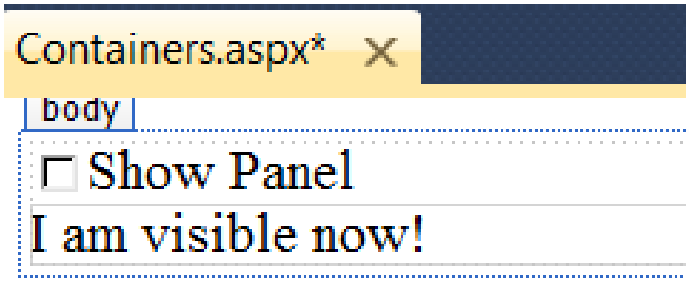


- **`Properties`**
  - **`CheckBox`** → **`Text = Show Panel`**
    `AutoPostBack = True`
  - **`Panel`** → **`Visible = False`**

Example
Panel Control



Type some text inside **`Panel`** → **`I am visible now!`**




```
<asp:CheckBox ID="CheckBox1" runat="server" AutoPostBack="True"
    Text="Show Panel" />
<asp:Panel ID="Panel1" runat="server" Visible="False">
    I am visible now!</asp:Panel>
```

Example
Panel Control

Double-click the **`CheckBox`** control.

```
protected void CheckBox1_CheckedChanged(object sender, EventArgs e)
{
    Panel1.Visible = CheckBox1.Checked;
}
```

Example
Panel Control

- View in browser & source

☐ Show Panel

```
<div>

    <asp:CheckBox ID="CheckBox1" runat="server" AutoPostBack="True"
        oncheckedchanged="CheckBox1_CheckedChanged" Text="Show Panel" />
    <asp:Panel ID="Panel1" runat="server" Visible="False">
        I am visible now!</asp:Panel>

</div>
```

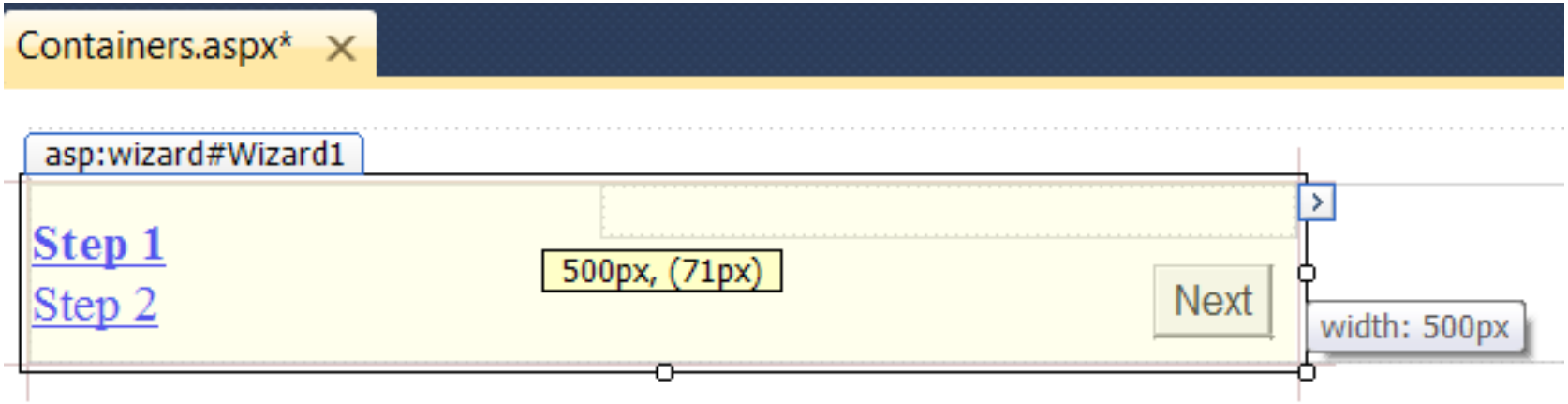
☑ Show Panel
I am visible now!

```
<div id="Panel1">

    I am visible now!
</div>
```

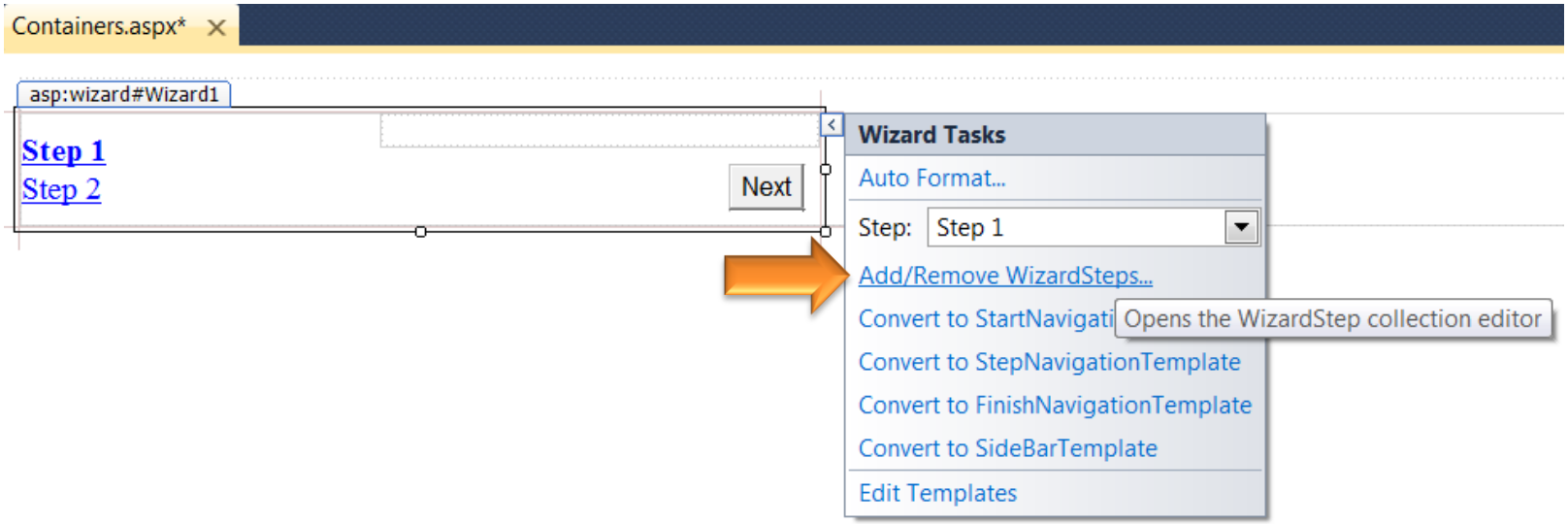
Example
Wizard Control

- In **`Containers.aspx`**:
  - Remove the text "**`I am visible now`**"
  - Drag a **`Wizard`** control inside the **`Panel`**
  - Drag its right edge further to the right, increasing the total width of the control to **`500px`**.

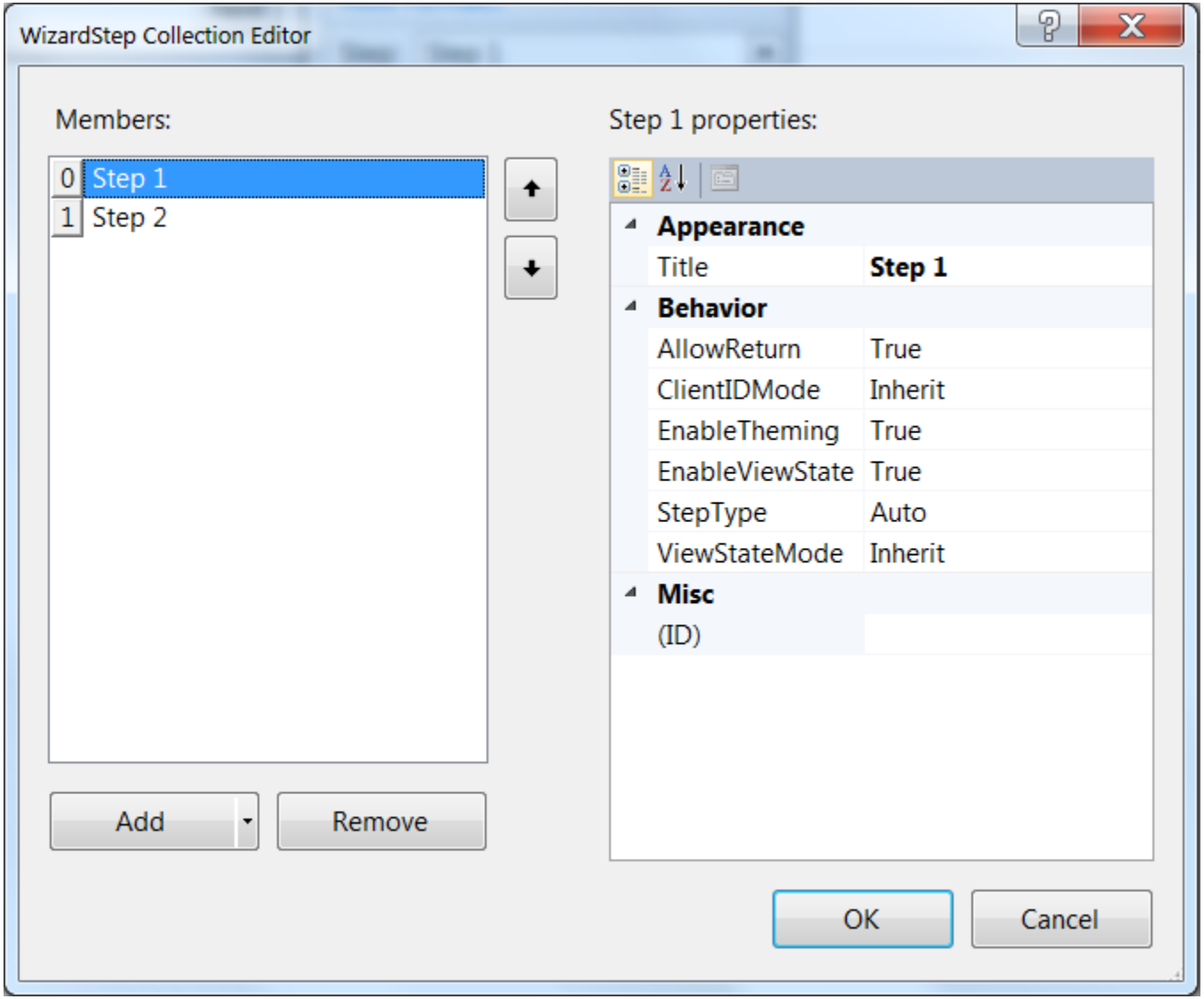


Example
Wizard Control

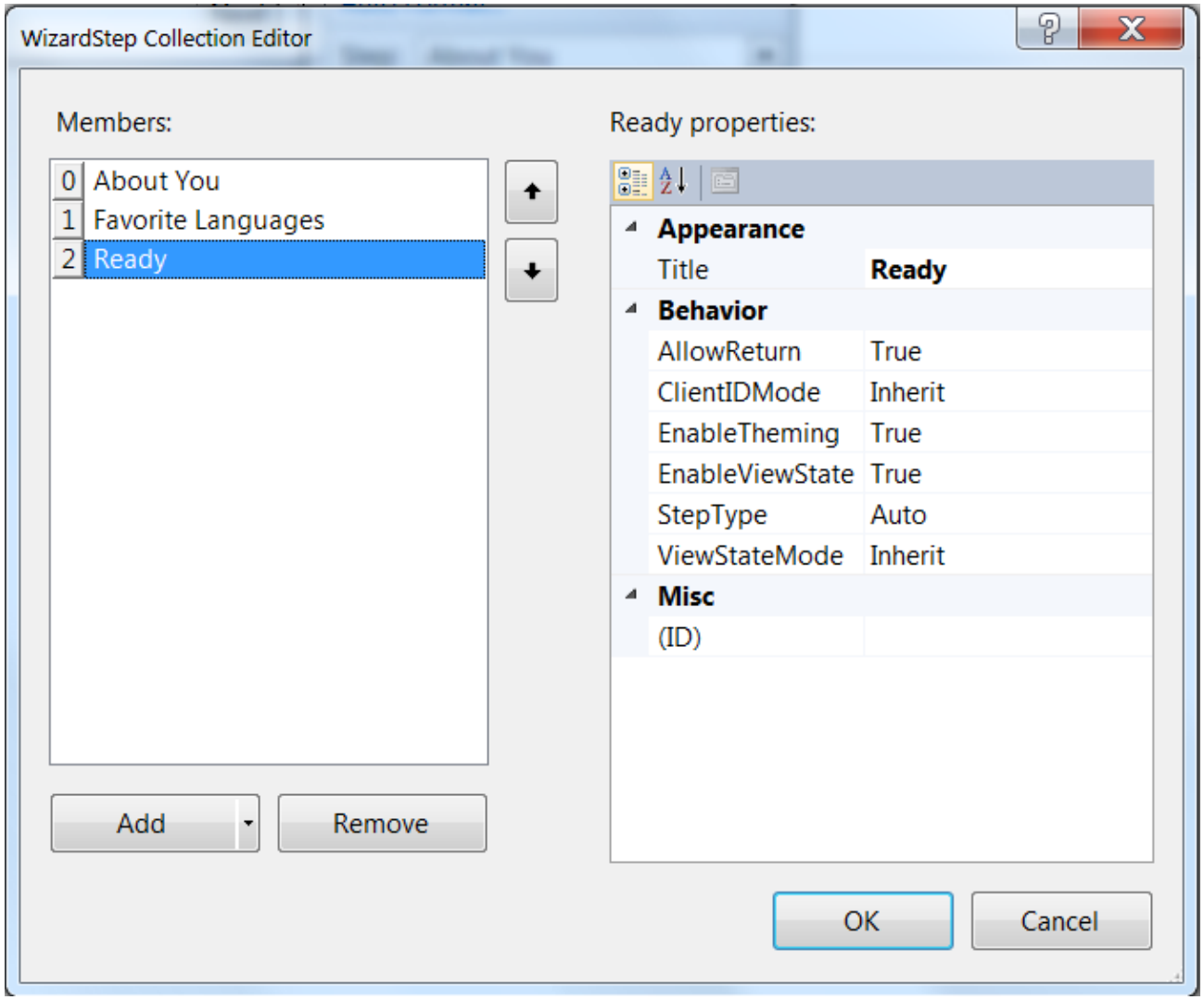
- Open the Wizard's Smart Tasks panel



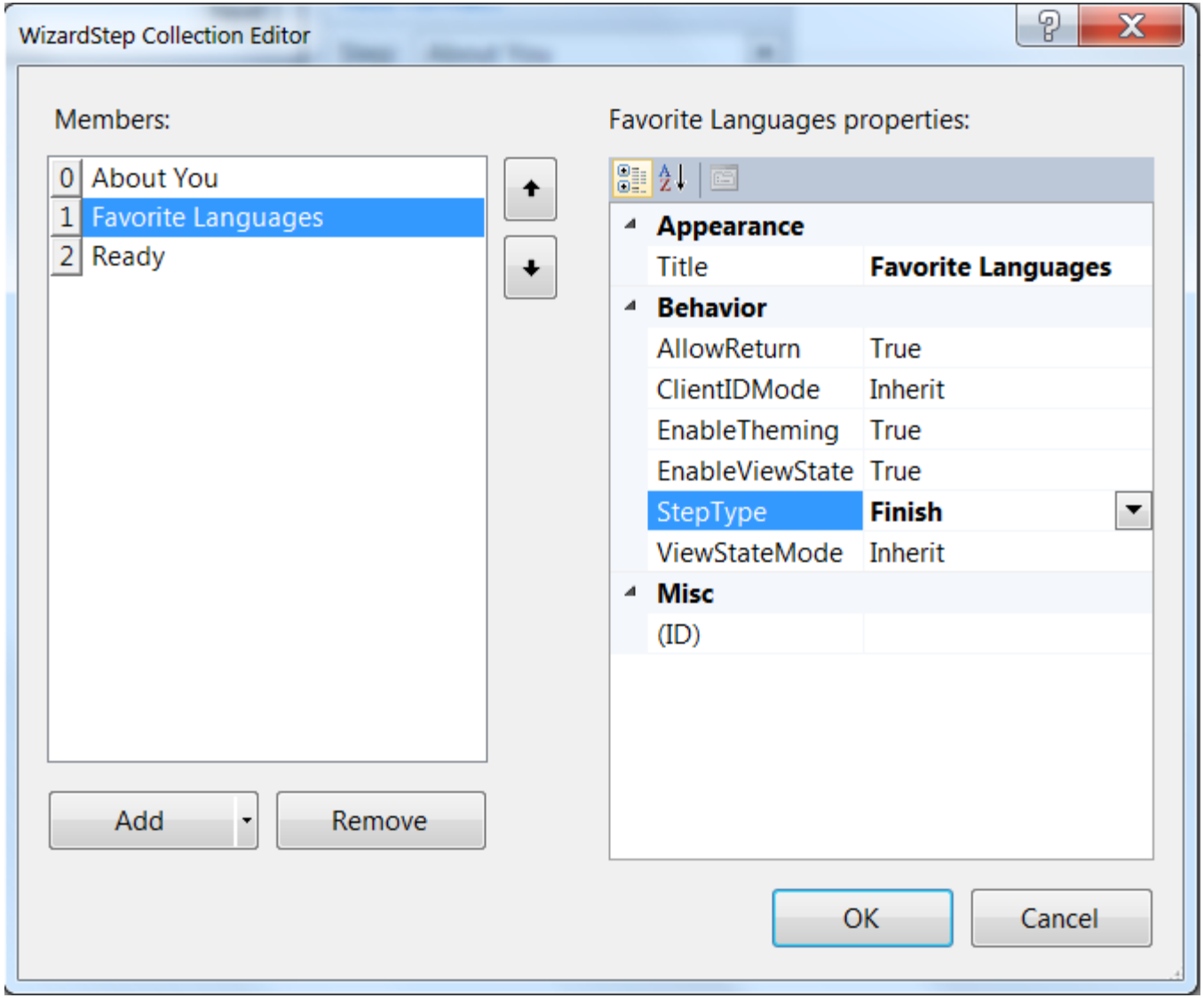
Example
Wizard Control



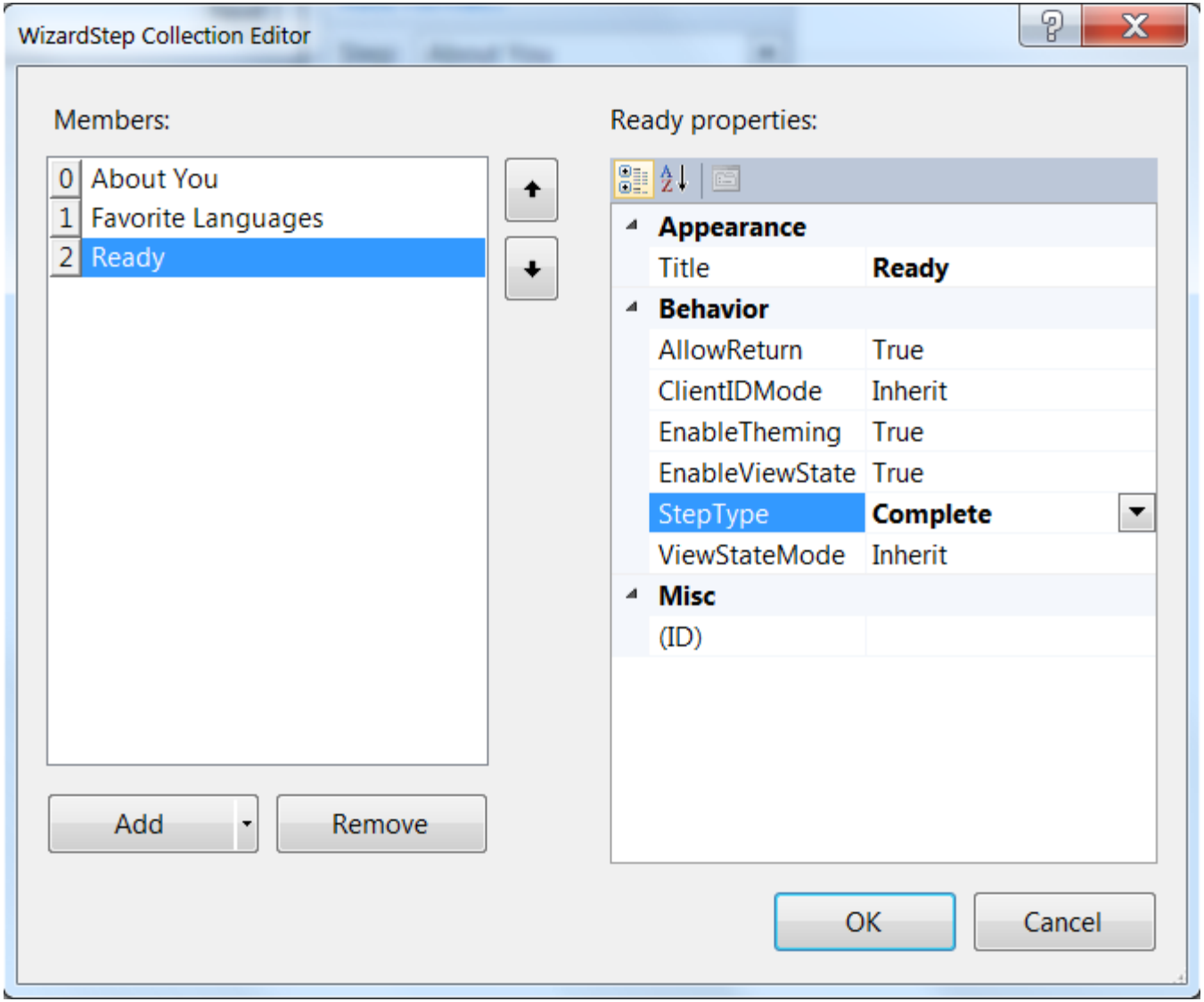
- Click the **Add** button to insert a third wizard step.
- Change the **Title** of **Members** list: **About You**, **Favorite Language** and **Ready**, respectively.



Change the **`StepType`** of the **`Favorite Language`** to **`Finish`**.



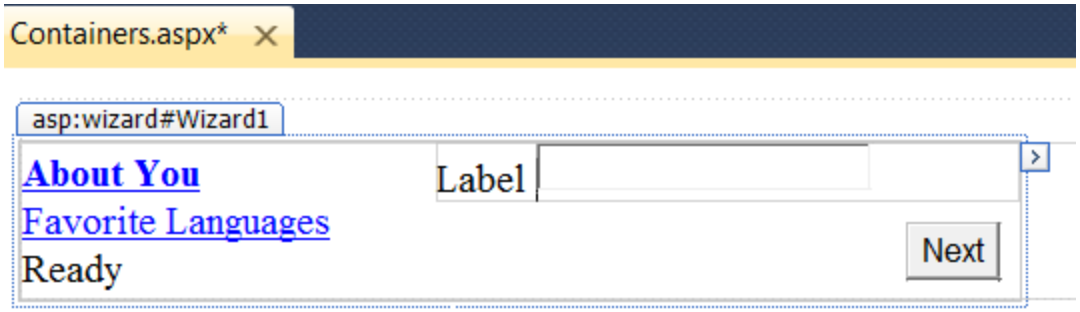
Change the **StepType** of the **Ready** to **Complete**.



Example
Wizard Control

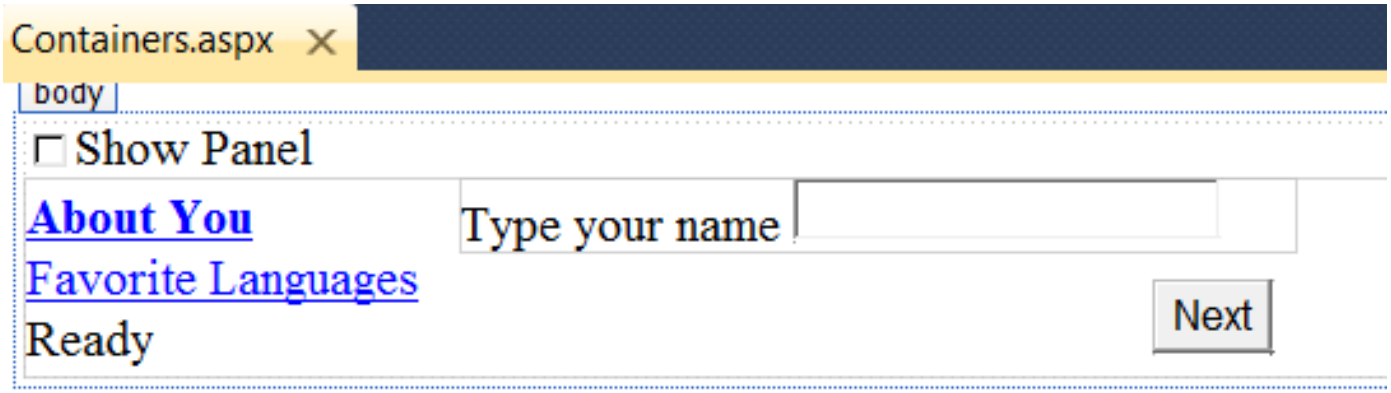
- Click **About You** to make it the active step

- Add a **Label** and a **TextBox** inside the grey rectangle.



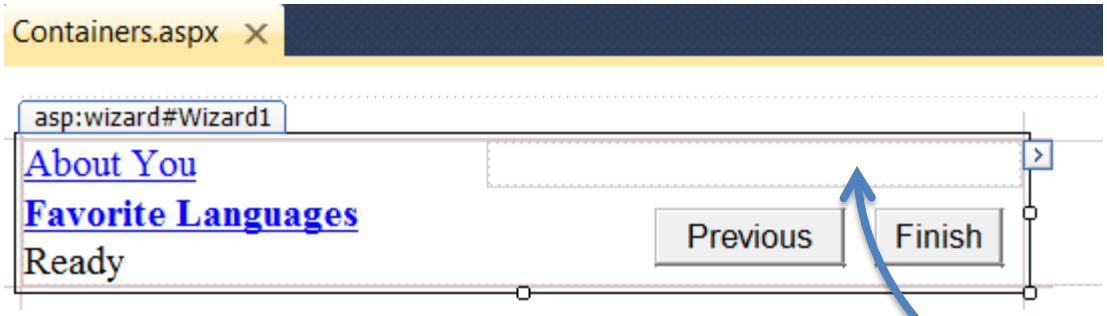
Example
Wizard Control

- Properties:
  - **`Label`** → **`Text = Type your name`**
  - **`TextBox`** → **`ID = yourNameTextBox`**



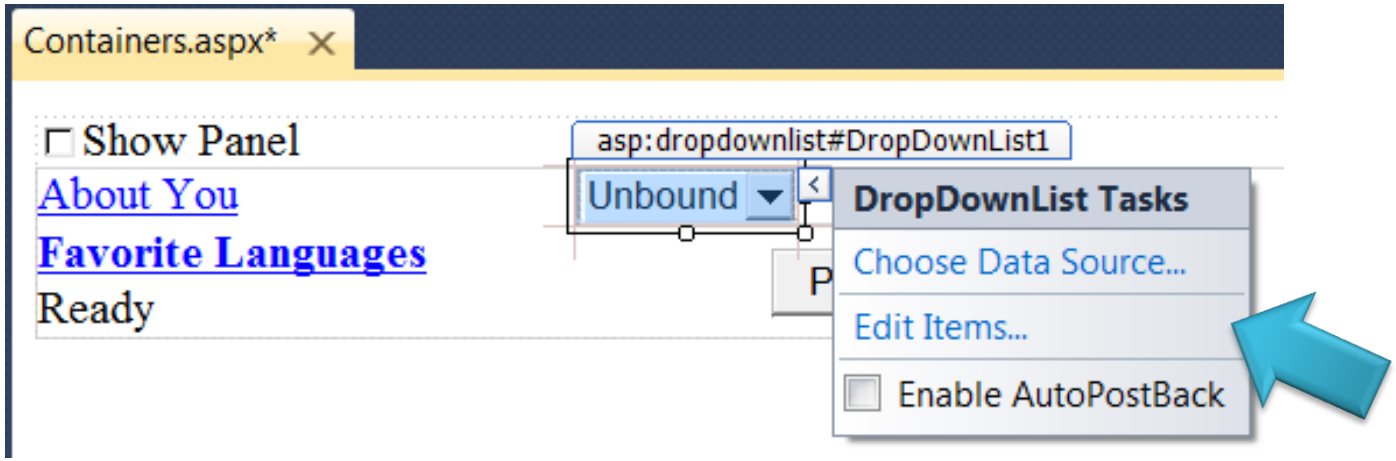
Example
Wizard Control

- Click **Favorite Language** to make it the active step



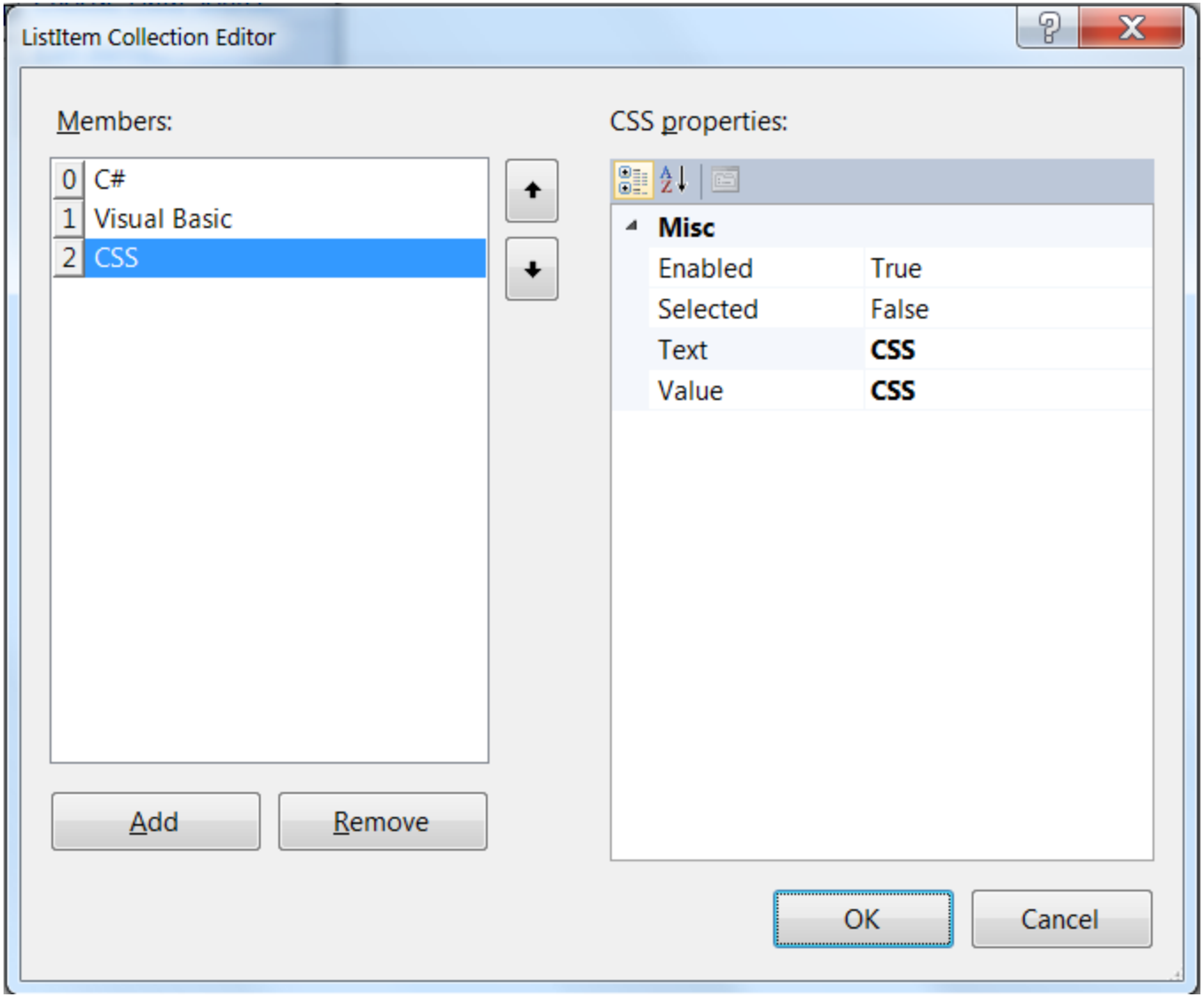
- Properties:
  - **ActiveStepIndex = 1**
- Add a **DropDownList** inside the grey rectangle.

Example
Wizard Control



- Properties:
  - **ID = favoriteLanguageDropDownList**
- Choose **Edit Items**

Add 3 items: C#, Visual Basic and CSS



Example
Wizard Control

- In Source View:

```
<asp:WizardStep runat="server" StepType="Complete" Title="Ready">
</asp:WizardStep>
```

- Drag a **`Label`** inside the last WizardStep labeled **`Ready`**.
  - Change **`Label`** → **`ID = Result`**

```
<asp:WizardStep runat="server" StepType="Complete" Title="Ready">
    <asp:Label ID="Result" runat="server" Text="Label"></asp:Label>
</asp:WizardStep>
```

Example
Wizard Control

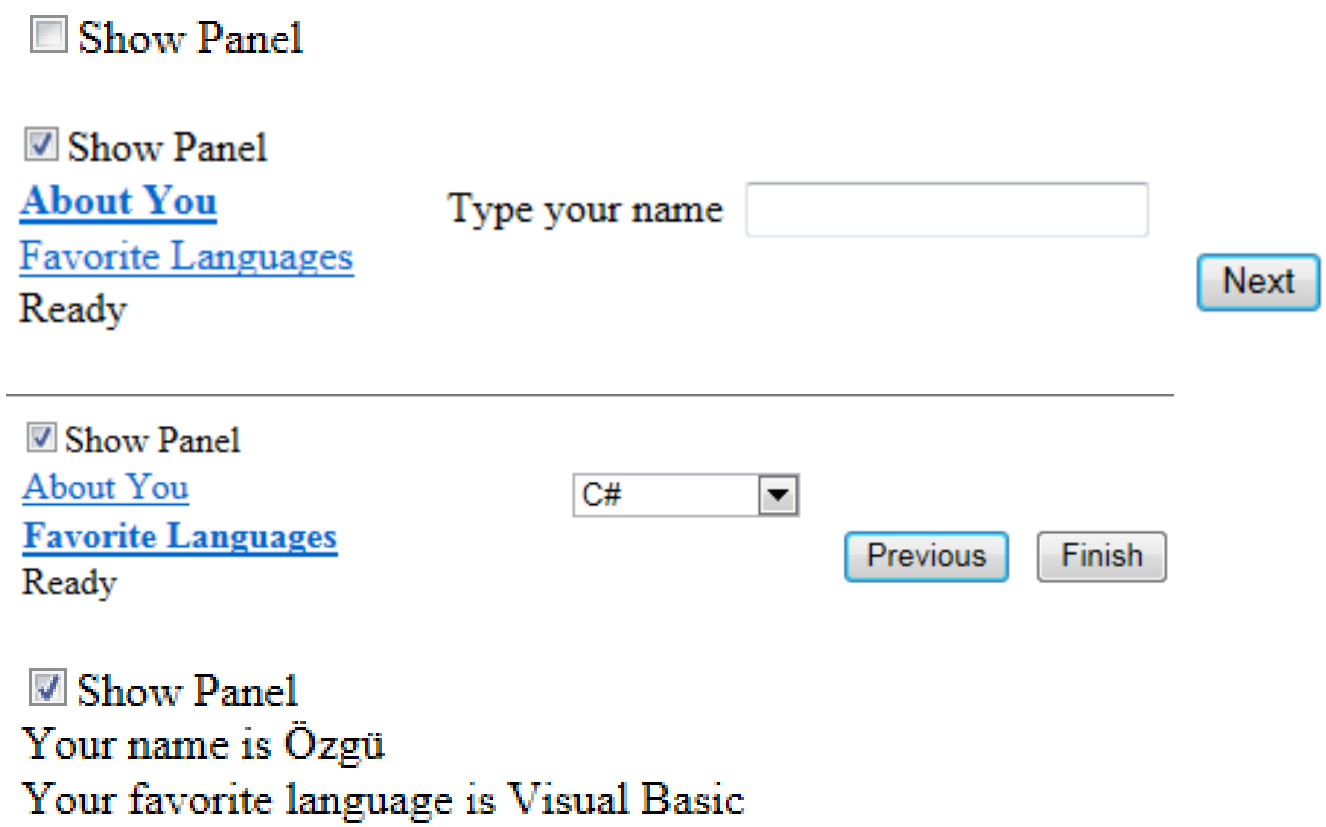
Example
Wizard Control

Double-click the Wizard **Finish** button

```
protected void Wizard1_FinishButtonClick(object sender, WizardNavigationEventArgs e)
{
    Result.Text = "Your name is " + yourNameTextBox.Text;
    Result.Text += "<br />Your favorite language is " + favoriteLanguageDropDownList.SelectedValue;
}
```

Example
Wizard Control

- View in browser

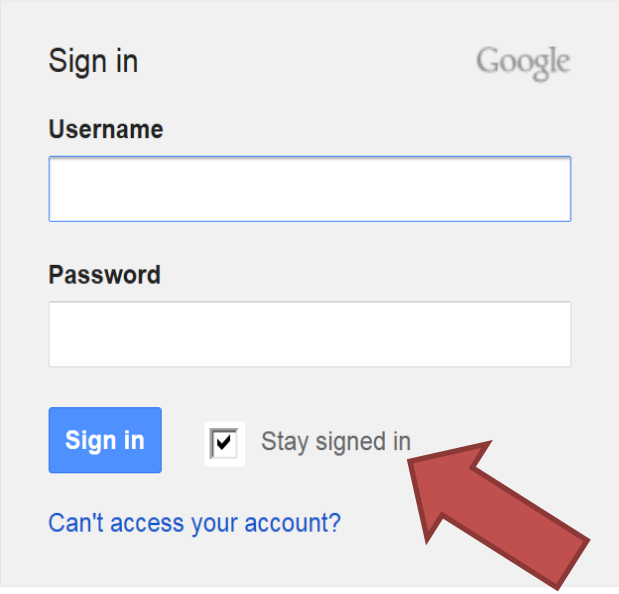


ASP.NET State Engine

- HTTP is *stateless*.
  - Web server **does not keep track of requests** that have been made from a specific browser.

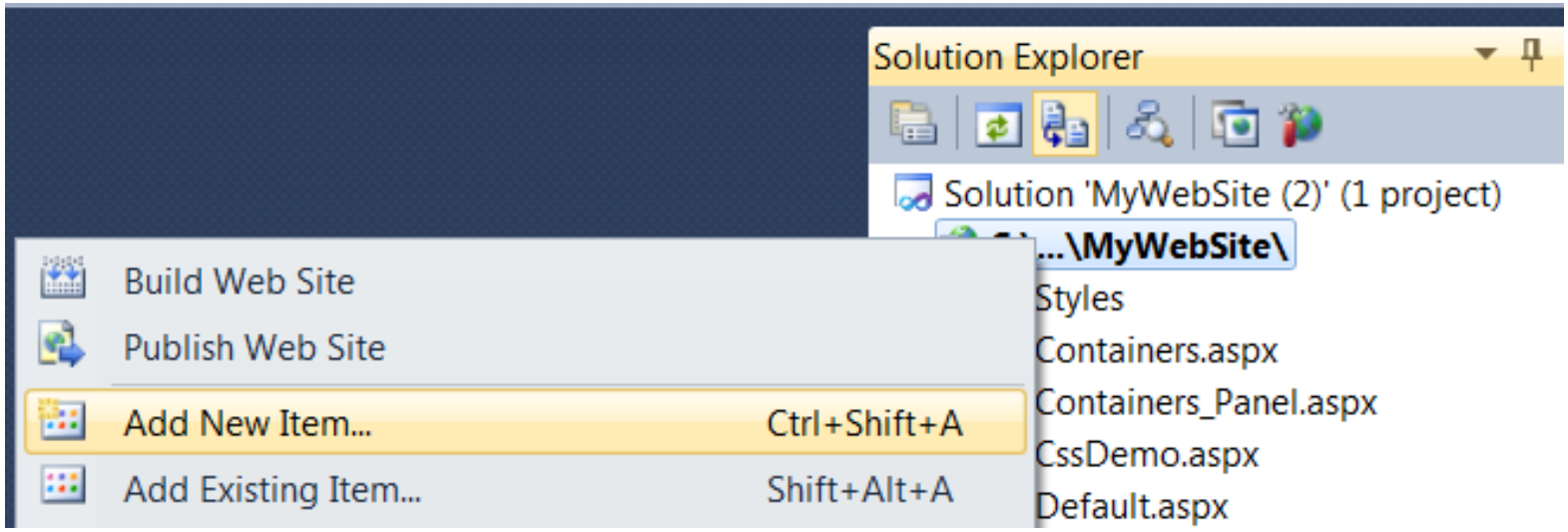
- It's useful if controls are able to maintain their own state.

- The state engine in ASP.NET is capable of storing state for many controls.

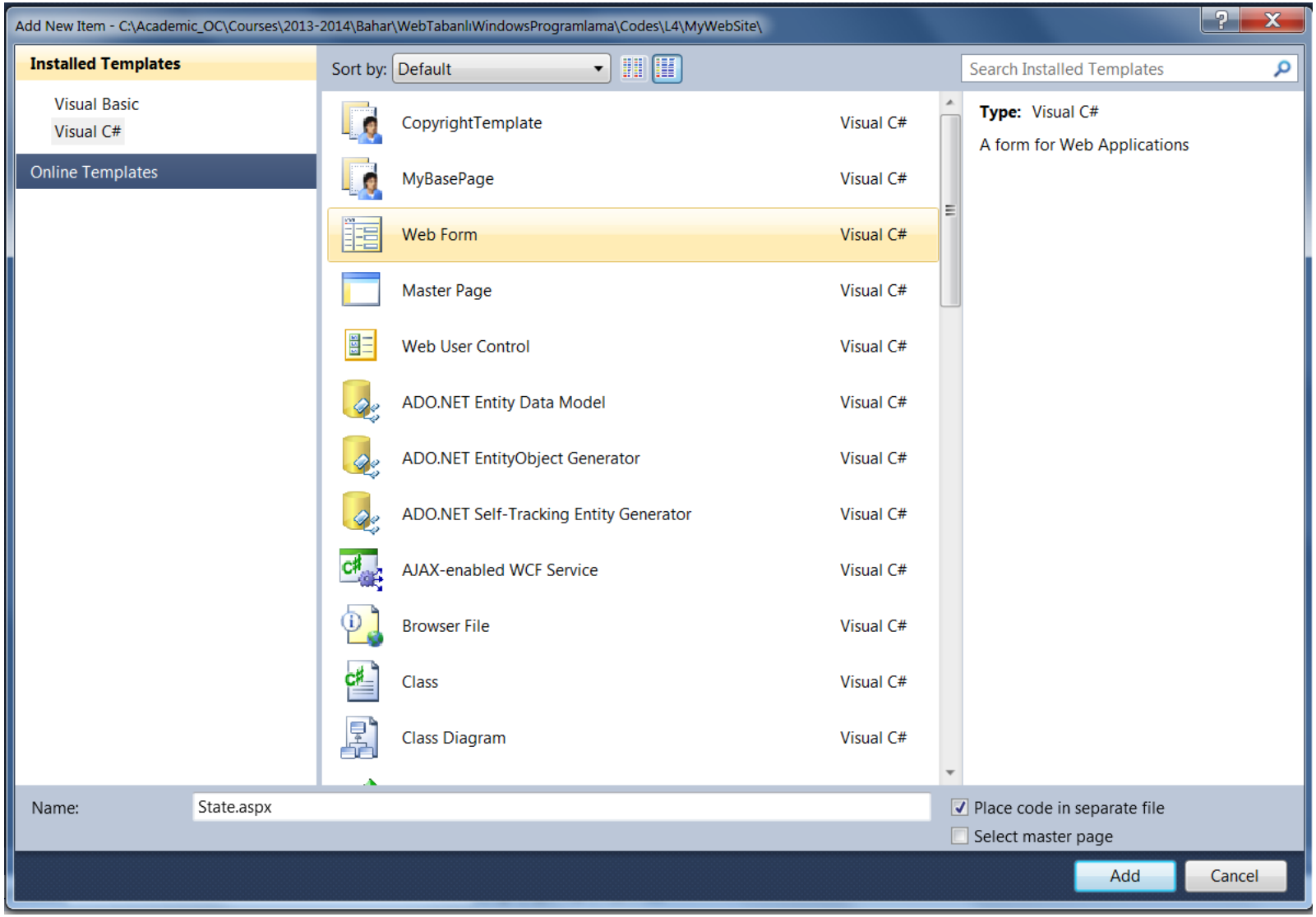


Example
ASP.NET State Engine

- Add New Item in the Solution Explorer

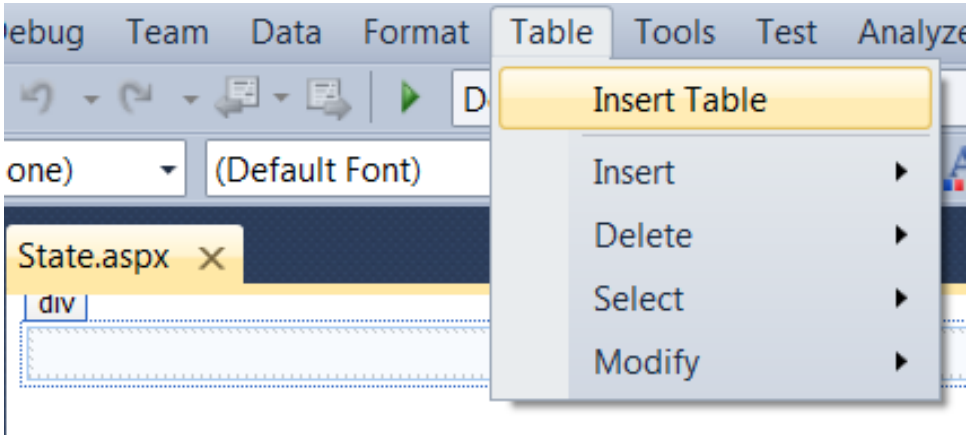


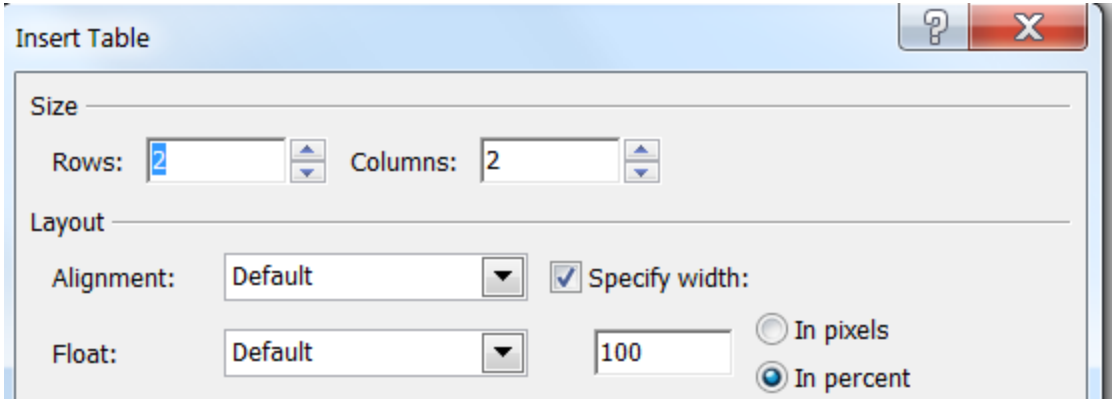
Example
ASP.NET State Engine



Example
ASP.NET State Engine

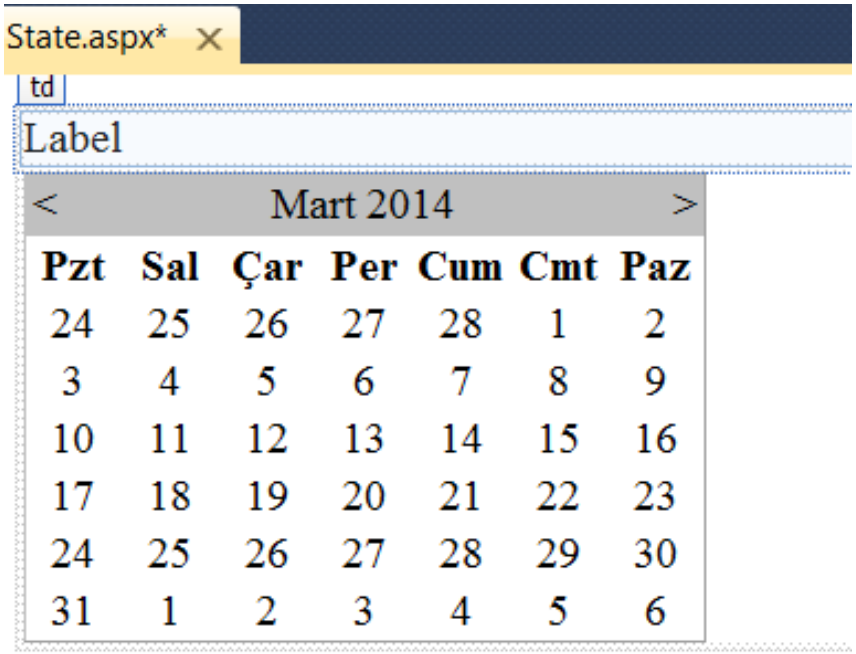
In Design View insert a table with 2 rows & 2 columns





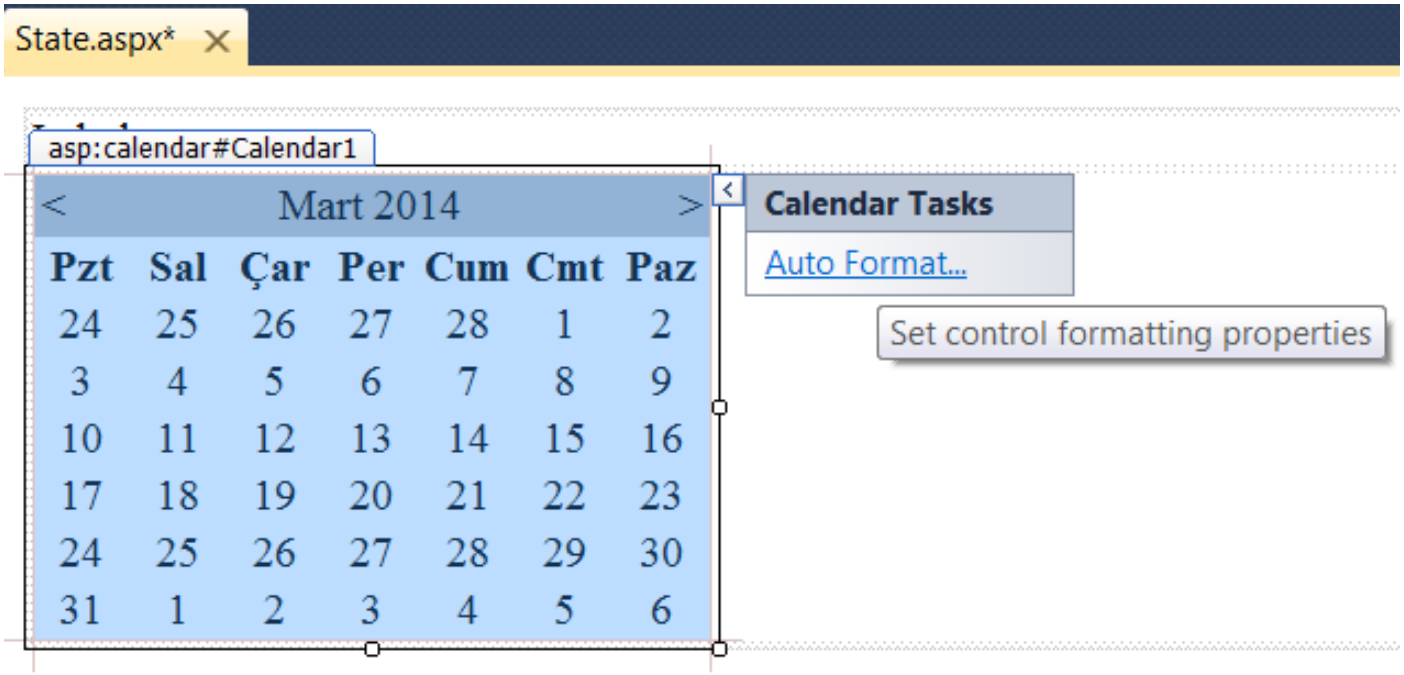
Example
ASP.NET State Engine

- Drag a **`Label`** → First cell first row
- Drag a **`Calendar`** → Second cell first row

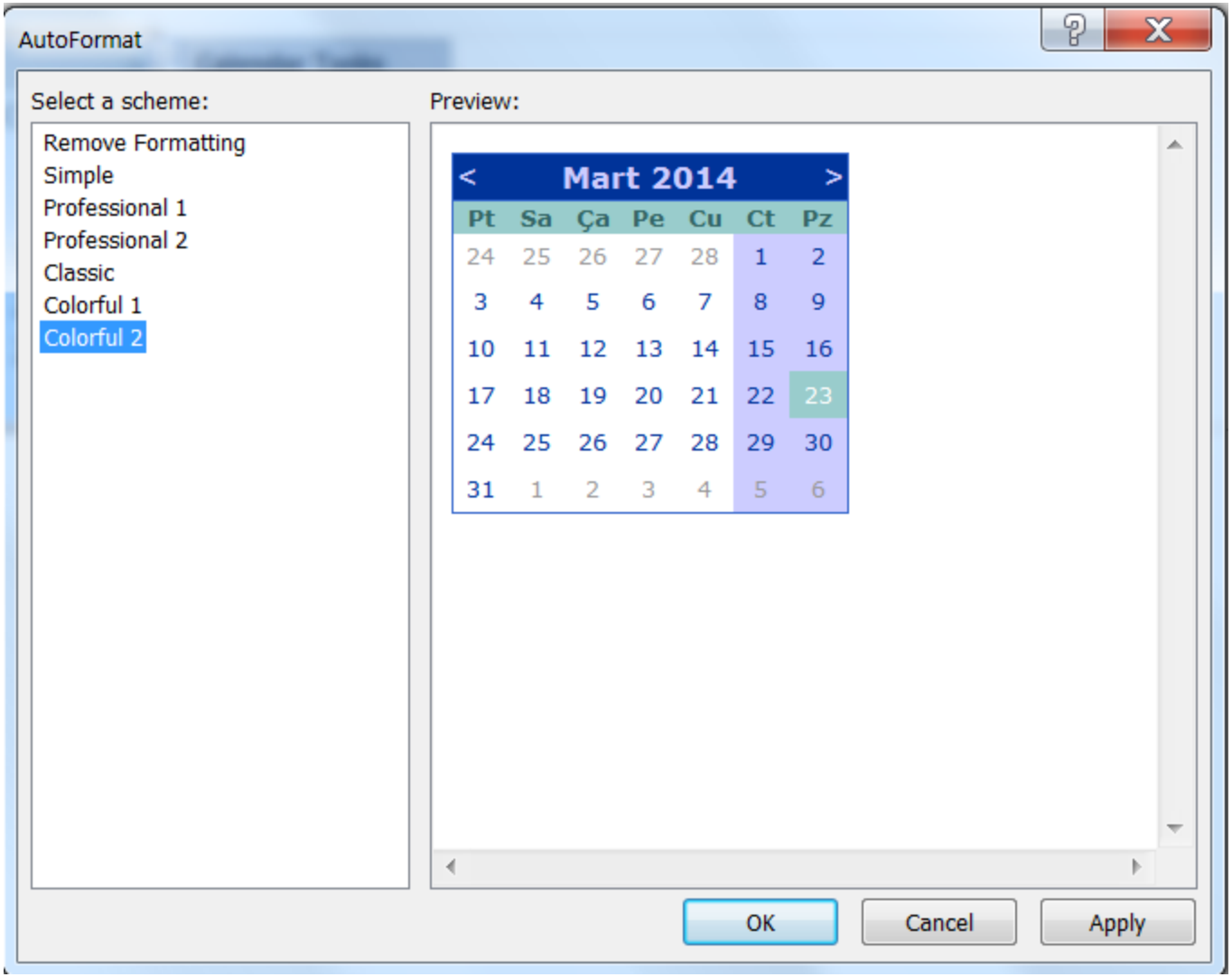


Example
ASP.NET State Engine

- Change the appearance of the calendar

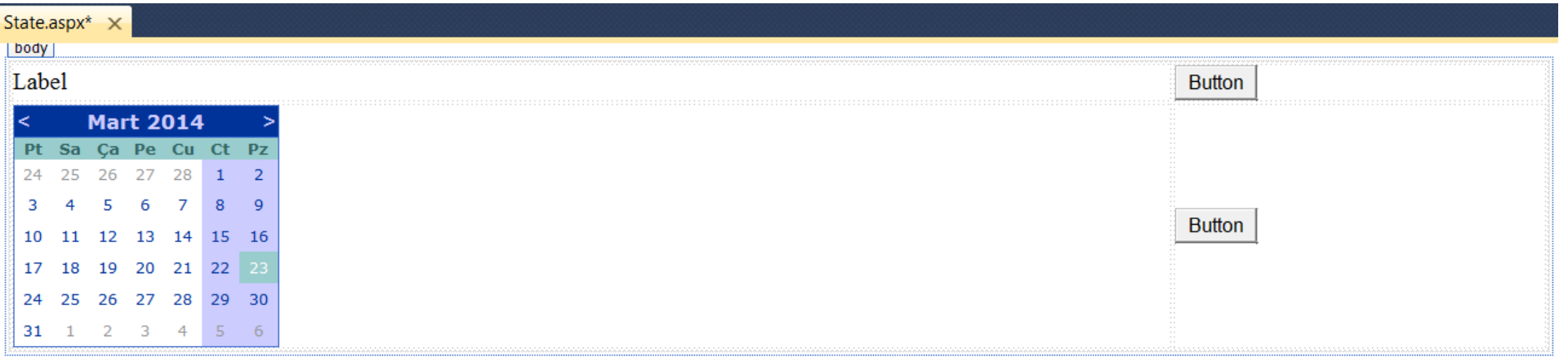


Example
ASP.NET State Engine



Example
ASP.NET State Engine

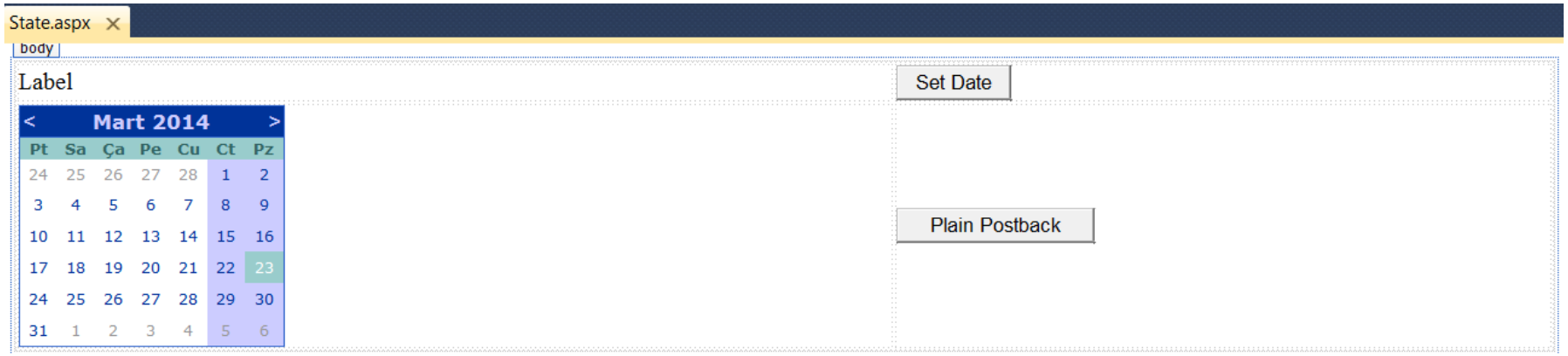
- Drag a **`Button`** control to each of the 2 cells



Example
ASP.NET State Engine

- Properties for the button in the 1st row:
  - `ID = setDateButton`
  - `Text = Set Date`
- Properties for the button in the 2nd row:
  - `ID = plainPostbackButton`
  - `Text = Plain Postback`

Example
ASP.NET State Engine



Example
ASP.NET State Engine

- Double-click **Set Date** button

```
protected void setDateButton_Click(object sender, EventArgs e)
{
    Label1.Text = DateTime.Now.ToString();
}
```

- View in browser

Label

Set Date

≤			Mart 2014			≥
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Plain Postback

- Click **Set Date**

23.03.2014 14:51:06

Set Date

≤			Mart 2014			≥
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Plain Postback

Notice that `Label` does not change when you click `Plain Postback`.

Example
ASP.NET State Engine

- **`Label`** Properties:
  - **`EnableViewState = False`**
  - Asp.NET runtime **does not track** the **`Label`** control anymore.

EnableViewState

- Gets or sets a value indicating whether the server control persists its view state, and the view state of any child controls it contains, to the requesting client.

- View in browser & Click **Set Date**

23.03.2014 14:58:57

Set Date

≤	Mart 2014					≥
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Plain Postback

- Click **Plain Postback**

Label

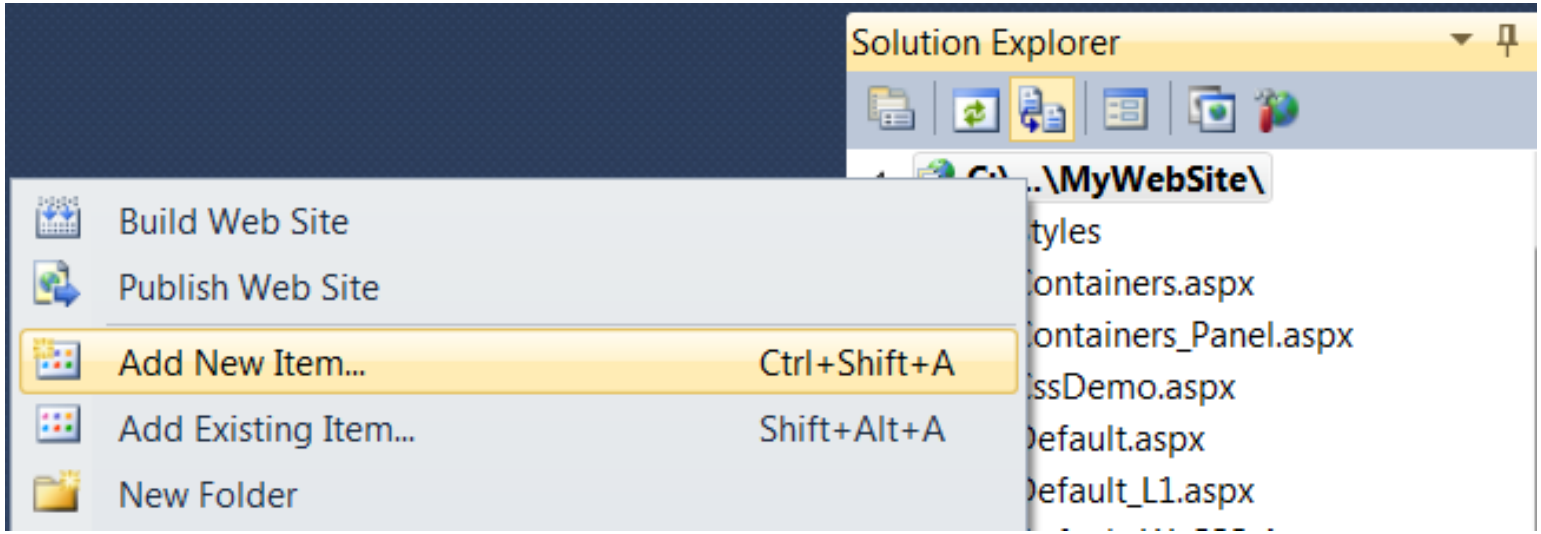
Set Date

≤	Mart 2014					≥
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

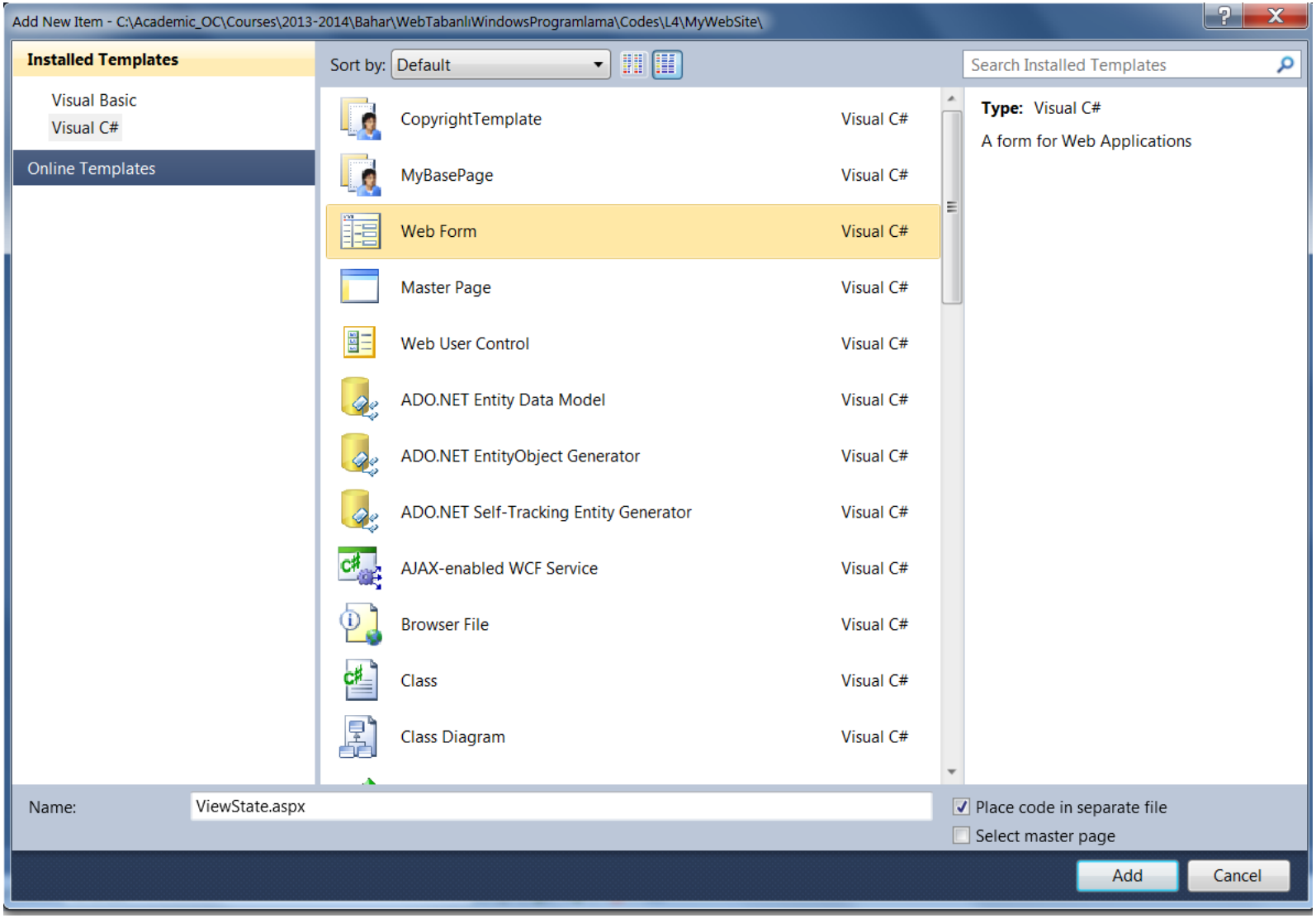
Plain Postback

Example
ViewState

- Add New Item in the Solution Explorer

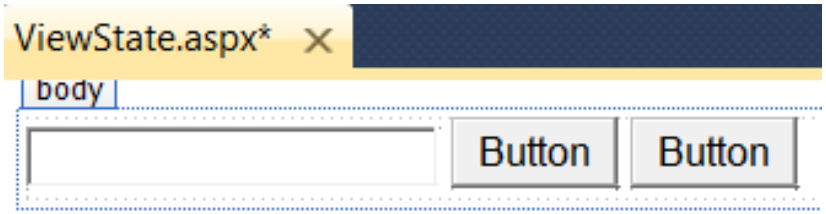


Example
ViewState

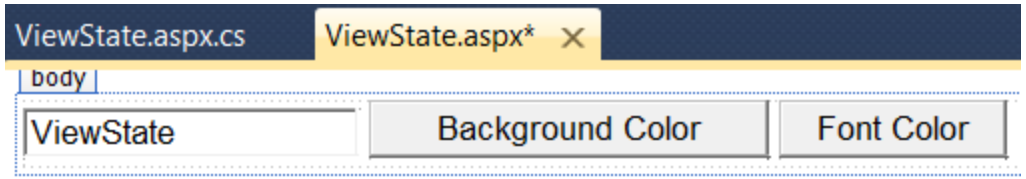


Example
ViewState

- Drag a **`TextBox`** and 2 **`Button`** control



- Properties:
  - **`TextBox`** → **`Text = ViewState`**
  - **`Button1`** → **`ID = backgroundColorButton`**
    `Text = Background Color`
  - **`Button2`** → **`ID = fontColorButton`**
    `Text = Font Color`



Example
ViewState

- Double-click **Background Color** button

```
protected void backgroundColorButton_Click(object sender, EventArgs e)
{
    TextBox1.BackColor = System.Drawing.Color.Orange;
}
```

- Double-click **Font Color** button

```
protected void fontColorButton_Click(object sender, EventArgs e)
{
    TextBox1.ForeColor = System.Drawing.Color.Green;
}
```

Example
ViewState

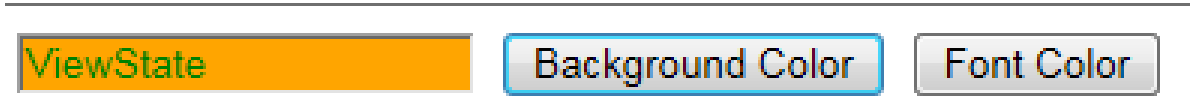
- Properties:
  - **`TextBox`** → **`EnableStateView = True`**

- View in browser

Example
ViewState

- Click **Background Color**

- Click **Font Color**



Example ViewState

- View source code

```
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE" value="/wEPDwUKLTc5NDc1NDA2MGRkgXj+tKVBdE9dbSzvduVa8muIjTPSxQB5rWi6nsi7QrU=" />
```

- After you click:

```
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
value="/wEPDwUKLTc5NDc1NDA2MA9kFgICAw9kFgICAQ8PFgYeCUJhY2tDb2xvcgp/HgRfIVNCAgweCUZvcmVDb2xvcgpPZGRktFa/eiATMUwNUFY97X8lnulmdlKYHb3j7kQuADdTCA0=" />
```

Example
ViewState

- Properties:
  - **`TextBox`** → **`EnableStateView = False`**

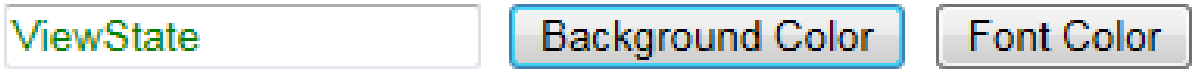
- View in browser

ViewState | Background Color | Font Color

Example
ViewState

- Click **Background Color**

- Click **Font Color**



ViewState

- View State engine adds a considerable amount of information to the page.
  - Turn it off when you don't need it.
- This way, you can minimize the size of the hidden `__VIEWSTATE` field.
  - The page becomes smaller → The page is loaded faster in the browser.

ViewState

- Turning off View State:
  - At the web site level
  - At the page level
  - At the control level

ViewState

At the web site level

- You can do this in the **`web.config`** file in the root of the site by modifying the **`<pages>`** element under **`<system.web>`**, setting the **`enableViewState`** attribute to **`false`**:

```
<pages enableViewState="false">
  ...
</pages>
```

ViewState

At the page level

- In the page directive you can set **`EnableViewState`** to **`False`**:

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="State.aspx.cs" Inherits="State" EnableViewState="false" %>
```

ViewState

At the control level

- Each ASP.NET Server Control enables you to set **`EnableViewState`** individually, giving you the option to turn it off for some controls, while leaving it on for others.

View State

- Once you've turned off View State at a higher level (*web.config* or *page level*) you can't turn it on again at a lower level (*the page* or a *specific control*).

- Do not turn off View State in the **`web.config`** file.

View State

- At the page level, set **EnableViewState** to **True** and **ViewStateMode** to **Disabled** :

```
<%@ Page Language="C#" … EnableViewState="True" ViewStateMode="Disabled" %>
```

- This turns off **View State** for all controls in the page *except for those that explicitly enable it* again by setting the **ViewStateMode** to **Enabled**.

View State

- For the controls you want to give **View State** support, set the **ViewStateMode** to **Enabled**:

```
<asp:Label ID="Label1" runat="server" Text="Label" ViewStateMode="Enabled" />
```

Example
ASP.NET State Engine (Cont'd)

- Modify the page directive in **State.aspx**

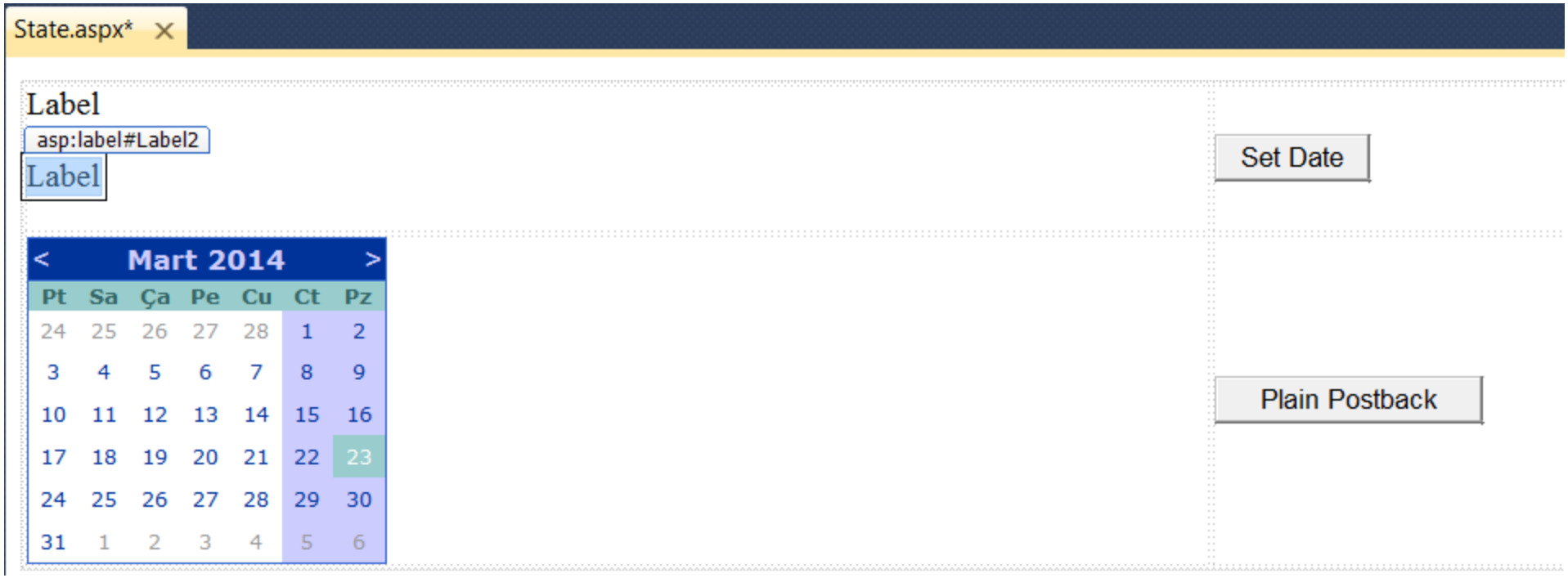
```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="State.aspx.cs" Inherits="State" %>
```

- **EnableViewState = True**
- **ViewStateMode = Disabled**

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="State.aspx.cs" Inherits="State" EnableViewState="true" ViewStateMode="Disabled" %>
```

Example
ASP.NET State Engine (Cont'd)

- In Desing View → Drag a second **`Label`**



Example
ASP.NET State Engine (Cont'd)

- *Enable* the **`ViewStateMode`** for **`Label1`**

```
<asp:Label ID="Label1" runat="server" ViewStateMode="Enabled" Text="Label"></asp:Label>
<br />
<br />
<asp:Label ID="Label2" runat="server" Text="Label"></asp:Label>
```

- Update **`setDateButton_Click`**

```
protected void setDateButton_Click(object sender, EventArgs e)
{
    Label1.Text = DateTime.Now.ToString();
    Label2.Text = DateTime.Now.ToString();
}
```

Example
ASP.NET State Engine (Cont'd)

- View in browser

Label

Label

<		Mart 2014				>
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Set Date

Plain Postback

23.03.2014 16:39:40

Set Date

23.03.2014 16:39:40

≤			Mart 2014			≥
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Plain Postback

Click **Plain Postback**

23.03.2014 16:39:40

Set Date

Label

≤			Mart 2014			≥
Pt	Sa	Ça	Pe	Cu	Ct	Pz
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Plain Postback