

ASP.NET

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ASP .NET - Introduction

- The latest version of ASP is known as ASP.NET
- Visual Studio .NET is a developer application used to create ASP.NET Web applications
- There are two main types of Web resources created with ASP.NET applications
 - **WebForms** are ASP.NET pages within an ASP.NET application
 - **Web Services** are ASP.NET Web pages that contain publicly exposed code so that other applications can interact with them
 - Web Services are identified with the file extension .asmx



2 .NET Overview

- Independent from a specific programming language
- Promotes software reuse
- Include tools for porting, adapting existing software components
- Web services



2.1 .NET Framework

- Manages and executes applications
- Framework Class Library (FCL)
 - Enforces security and supplies many other programming capabilities
 - Reusable components that programmers can incorporate into their applications
- Common Language Runtime (CLR)
 - Executes programs written in any .NET-compatible programming language
- .NET Compact Framework



2.2 ASP (Active Server Pages) .NET

- Multi-tier, database-intensive applications
- Includes optimizations for performance, testing and security
- ASPX files
- XHTML documents
 - Static



WebForms

- The ASP.NET WebForm is separated into two logical areas:
 - The HTML template
 - A collection of code behind the WebForm
- **The HTML template**
 - Contains the design layout, content, and the controls
 - Creates the user interface, or **presentation layer**
 - Instructs the browser how to format the Web page
 - Is created using a combination of HTML controls, HTML Server controls, Mobile Controls, and ASP.NET controls



Server Controls

- HTML Server controls are similar to the HTML controls, except they are processed by the server
- Add `runat = "server"` to the HTML control to transform it into an HTML Server control
- HTML control: `<input type="text">`
- HTML Server control:
 `<input type="text" runat="server"/>`
 `<input type="radio" runat="server" value="Yes"/> Yes`
- Server-side programs can interact with the control before it is rendered as a plain HTML control and sent to the browser



ASP.NET Controls

- ASP.NET form controls will create the HTML code
- ASP.NET Server controls are organized as:
 - ASP.NET Form Controls
 - Data Validation Controls
 - User Controls
 - Mobile Controls
- ASP.NET controls are usually identified with the prefix asp: followed by the name of the control
- ASP.NET button:

```
<asp:Button id="ShowBtn" runat="server"  
    Text="Show the message." />
```



Web Services

- Web Services also provide a means to expose .NET functionality on the web but Web Services expose functionality via XML and SOAP (cf: function calls over the web)



Web Services

- If your business partner is Course Technology and you want to query that company's product catalog from your Web site, you could:
 - Post a link
 - Scrape a Web site (use a program to view a Web site and capture the source code)
 - Provide a Web Service to their catalog application
- Web Services are used to create business-to-business applications
 - Web Services allow you to expose part or all of your programs over the Internet. The Web Service source file has the extension .asmx
 - A public registry known as UDDI contains registered public Web Services. Third party Web Services are available at <http://www.xmethods.com>



4 JScript .NET

- Truly object-oriented language
- Backward compatible with JScript
- Adheres to ECMA 262 Edition 4 standard
- Provides classes, packages, typed variables and access to .NET Framework



5 A Simple ASP.NET Example

- Scripting delimiters <% and %>
 - Wrapped around Jscript.NET code
 - Compiled and executed on the server
 - @ Page directive
 - Specifies information needed by CLR to process file
 - Language attribute
 - Specifies JScript.NET as scripting language
 - runat attribute with value “server”
 - Indicates script should be processed on server



<!-- Fig. 3: date.aspx -->

<!-- A simple ASP.NET example -->

<html>

<head>

<title>A Simple ASP.NET Example</title>

<style type = "text/css">

td { background-color: black;

color: yellow }

strong { font-family: arial, sans-serif;

font-size: 14pt; color: blue }

p { font-size: 14pt }

</style>

<script runat = "server" language = "JScript">

var dayAndTime : DateTime = DateTime.Now;

</script>

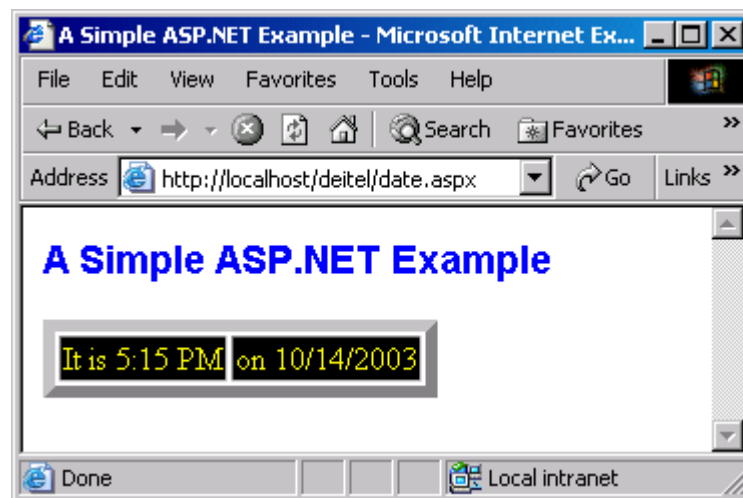
</head>

```

<body>
  <strong>A Simple ASP.NET Example</strong>
  <p>
    <table border = "6">
      <tr>
        <td> It is
          <% Response.Write( dayAndTime.ToShortTimeString() ); %>
        </td>

        <td> on
          <% Response.Write( dayAndTime.ToShortDateString() ); %>
        </td>
      </tr>
    </table>
  </p>
</body>
</html>

```



```
1 <!-- Fig. 23.3: date.aspx -->
2 <!-- A Simple ASP.NET example -->
3
4
5
6
7 <html>
8
9     <head>
10         <title>A Simple ASP.NET Example</title>
11         <style type = "text/css">
12             td        { background-color: black;
13                         color: yellow }
14             strong    { font-family: arial, sans-serif;
15                         font-size: 14pt; color: blue }
16             p          { font-size: 14pt }
17         </style>
18
19     </head>
20
21     <body>
22         <strong>A Simple ASP.NET Example</strong>
23         <p>
24             <table border = "6">
25                 <tr>
```

```
26         <td>
27             It is 5:15 PM
28         </td>
29
30         <td>
31             on 10/14/2003
32         </td>
33     </tr>
34 </table>
35 </p>
36 </body>
37 </html>
```

5 A Simple ASP.NET Example

Object Name	Description
Request	Used to access information passed by an HTTP request.
Response	Used to control the information sent to the client.
Server	Used to access methods and properties on the server.
Commonly used ASP.NET objects.	

6 Web Forms

- <form> tag
 - Designate ASP.NET Web Form
- Web controls
 - HTML server controls
 - Programmable HTML elements run on the server
 - Web server controls
 - Form-like controls such as drop-down lists and text boxes
- Validation controls (validators)
 - Required field validator
 - Range validator
- User controls
 - Created by programmer

HTML Server Control	Description
HtmlAnchor	Navigation link.
HtmlButton	Customizable input button.
HtmlTable	Programmatically built table.
HtmlInputFile	Handles uploading of files from client to server.
HtmlImage	Renders images.
HtmlForm	User-input form.
HTML server controls.	

Web Server Control	Description
AdRotator	Presents ad images and ad banners.
DataGrid	Displays tabular data and supports selecting, sorting and editing data.
TextBox	Enables user to enter text.
HyperLink	Creates a link to another document.
DropDownList	Provides a single-select drop-down list.
Calendar	Displays a month calendar from which users can select dates.
Web server controls.	

6 Web Forms

Server Control	Description
RequiredFieldValidator	Checks that the user does not leave a field blank.
CompareValidator	Compares an input value with another value. The value being compared to may be another control's input value.
RangeValidator	Checks that a user's entry is within a specified range.
RegularExpressionValidator	Checks that the entry matches a regular expression pattern.
ValidationSummary	Displays the validation errors for all the validation controls on a page.
Validation server controls.	



6 Web Forms

Validate Fields - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Mail

Address <http://localhost/deitel/validation.aspx> Go

Name: Please enter your name.

Do you like ice cream?

☐ Yes

☐ No

How many scoops would you like? (0-45)

Done Local intranet

Validate Fields - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Mail

Address <http://localhost/deitel/validation.aspx> Go

Name:

Do you like ice cream?

☒ Yes

☐ No

How many scoops would you like? (0-45)

We cannot give you that many scoops.

Ant Arctic likes ice cream.

Done Local intranet

Validation error output.



6 Web Forms

Validate Fields - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print View Source

Address <http://localhost/deitel/validation.aspx> Go

Name:

Do you like ice cream?

☒ Yes

☐ No

How many scoops would you like? (0-45)

Ant Arctic likes ice cream.

Done Local intranet

Valid page without validation errors.

```
1 <%@ Page Language="JScript" %>
2
3 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
4     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
5
6 <!-- Fig. 23.13: adRotator.aspx -->
7 <!-- ASP.NET AdRotator example -->
8
9 <html>
10     <head>
11         <title>Using An AdRotator</title>
12
13         <script language = "JScript" runat = "server">
14
15             function submitButton_Click(
16                 sender : Object, events : EventArgs ) : void
17             {
18                 if ( IsPostBack )
19                 {
20                     if ( iceCream.SelectedItem == "Yes" )
21                     {
22                         message.Text = name.Text + " likes ice cream.";
23                     }
24                     else
25                     {
```

```
26         message.Text = name.Text + " does not like ice cream.";
27     }
28 }
29
30     } // end submitButton_Click
31 </script>
32 </head>
33
34 <body>
35     <form action = "adRotator.aspx" method = "post" runat = "server">
36
37         <asp:AdRotator AdvertisementFile = "ads.xml"
38             BorderColor = "black" BorderWidth = "1" runat = "server"/>
39
40         <table>
41             <tr>
42                 <td>
43                     Name: <asp:textbox id = "name" runat = "server"/>
44                 </td>
45                 <td>
46                     <asp:RequiredFieldValidator id = "required"
47                         ControlToValidate = "name"
48                         Display = "Static"
49                         runat = "server">
50                         Please enter your name.
```

```
</asp:RequiredFieldValidator>
```

```
</td>
```

```
</tr>
```

```
</table>
```

```
<br />
```

Do you like ice cream?

```
<asp:RadioButtonList id = "iceCream" runat = "server">
```

```
<asp:ListItem>Yes</asp:ListItem>
```

```
<asp:ListItem>No</asp:ListItem>
```

```
</asp:RadioButtonList>
```

```
<br />
```

How many scoops would you like? (0-45)

```
<asp:TextBox id = "scoops" runat = "server" />
```

```
<br />
```

```
<asp:button text = "Submit" OnClick = "submitButton_Click"
```

```
runat = "server"/>
```

```
<asp:RangeValidator
```

```
ControlToValidate = "scoops"
```

```
MinimumValue = "0"
```

```
76         MaximumValue = "45"
77         Type = "Integer"
78         EnableClientScript = "false"
79         Text = "We cannot give you that many scoops."
80         runat = "server" />
81
82     <center>
83         <h1> <asp:label id = "message" runat = "server"/> </h1>
84     </center>
85
86 </form>
87 </body>
88 </html>
```

```
1 <?xml version = "1.0" ?>
2
3 <!-- Fig. 23.14: ads.xml -->
4 <!-- Flag database -->
5
6 <Advertisements>
7
8     <Ad>
9         <ImageUrl>images/unitedstates.png</ImageUrl>
10        <NavigateUrl>http://www.usa.worldweb.com/</NavigateUrl>
11        <AlternateText>US Tourism</AlternateText>
12        <Impressions>80</Impressions>
13    </Ad>
14
15    <Ad>
16        <ImageUrl>images/germany.png</ImageUrl>
17        <NavigateUrl>http://www.germany-tourism.de/</NavigateUrl>
18        <AlternateText>German Tourism</AlternateText>
19        <Impressions>80</Impressions>
20    </Ad>
21
22    <Ad>
23        <ImageUrl>images/spain.png</ImageUrl>
24        <NavigateUrl>http://www.tourspain.es/</NavigateUrl>
25        <AlternateText>Spanish Tourism</AlternateText>
```

26	<Impressions>80</Impressions>
27	</Ad>
28	
29	</Advertisements>

10 Connecting to a Database in ASP.NET

- `OleDbDataReader` object
 - Reads data from a database
- `OleDbConnection` object
 - Represents connection to database
- `OleDbCommand` object
 - Two parameters
 - `queryString`
 - Contains SQL to execute
 - Database connection
- `ExecuteReader`
- `DataSet`
 - Set of data and includes the tables that contain and order it
- `OleDbDataAdapter`
 - Retrieve information from database and place resulting information in `DataSet`