

Case Study: ASP.NET and XML

Outline

- 24.1 Introduction**
- 24.2 Setup and Message Forum Documents**
- 24.3 Forum Navigation**
- 24.4 Adding Forums**
- 24.5 Forum XML Documents**
- 24.6 Posting Messages**
- 24.7 CSS Document for Forum Pages**
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Objectives

- In this lesson, you will learn:
 - To create a Web-based message forum using ASP.NET Pages.
 - To use XML with ASP.NET.
 - To be able to add new forums.
 - To be able to post messages to the message forum.
 - To use .NET Framework classes to manipulate XML documents.
 - To use XSLT to transform XML documents.

24.1 Introduction

- Message forums
 - “virtual” bulletin boards
 - `messages.yahoo.com`
 - `web.eesite.com/forums`
 - `groups.google.com`

24.2 Setup and Message Forum Documents

- Software
 - Microsoft Internet Information Services (IIS) 5 or 6
 - Internet Explorer 6 (for ML and XSLT processing)
 - MSXML 3.0 or higher (included with IE 6)
- Main page, default.aspx
 - Displays list of available message forums

24.2 Setup and Message Forum Documents

File Name	Description
default.aspx	Main page, providing navigational links to the forums.
addForum.aspx	Adds a forum.
addPost.aspx	Adds a message to a forum.
forums.xml	XML document listing all available forums and their filenames.
forumASP.xml	Sample message forum.
forums.xsl	XSL for transforming forum listing into XHTML.
formatting.xsl	Document for transforming message forums into XHTML.
style.css	Style sheet for formatting the message forum site.

Fig. 24.1 Message forum documents.

24.2 Setup and Message Forum Documents

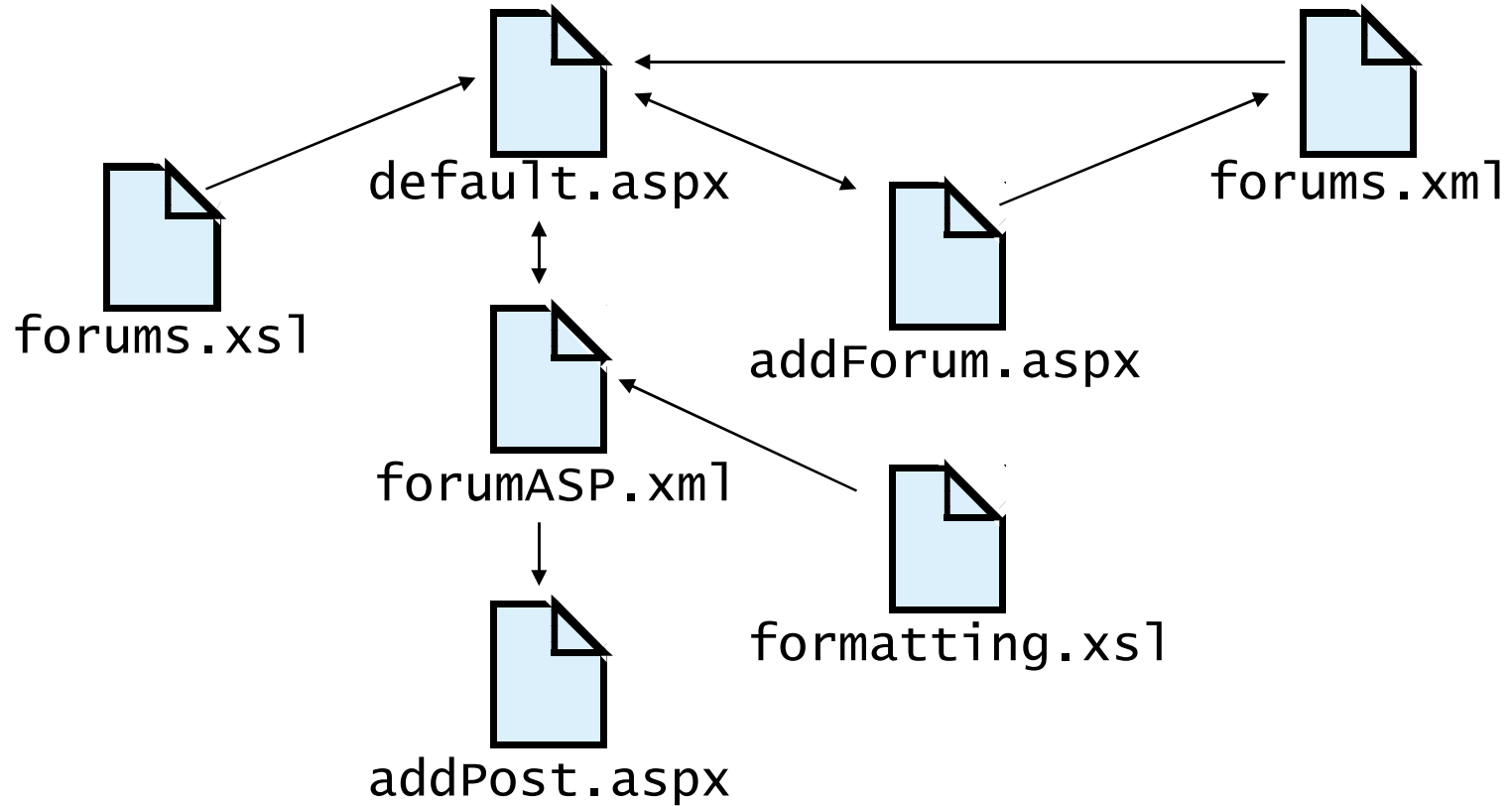


Fig. 24.2 Interactions between message forum documents.

24.3 Forum Navigation

- Root element forums
- Attribute filename
 - Stores name of XML document contains forum's messages and markup
- Attribute DocumentSource
 - Specifies a path to an XML file to display
- Attribute TransformSource
 - Specifies an XSLT document

```
1 <?xml version = "1.0"?>
2
3 <!-- Fig. 24.3: forums.xml -->
4 <!-- Creating the ASP.NET forum -->
5
6 <forums>
7
8     <forum filename = "forumASP.xml">ASP.NET Forum</forum>
9
10 </forums>
```

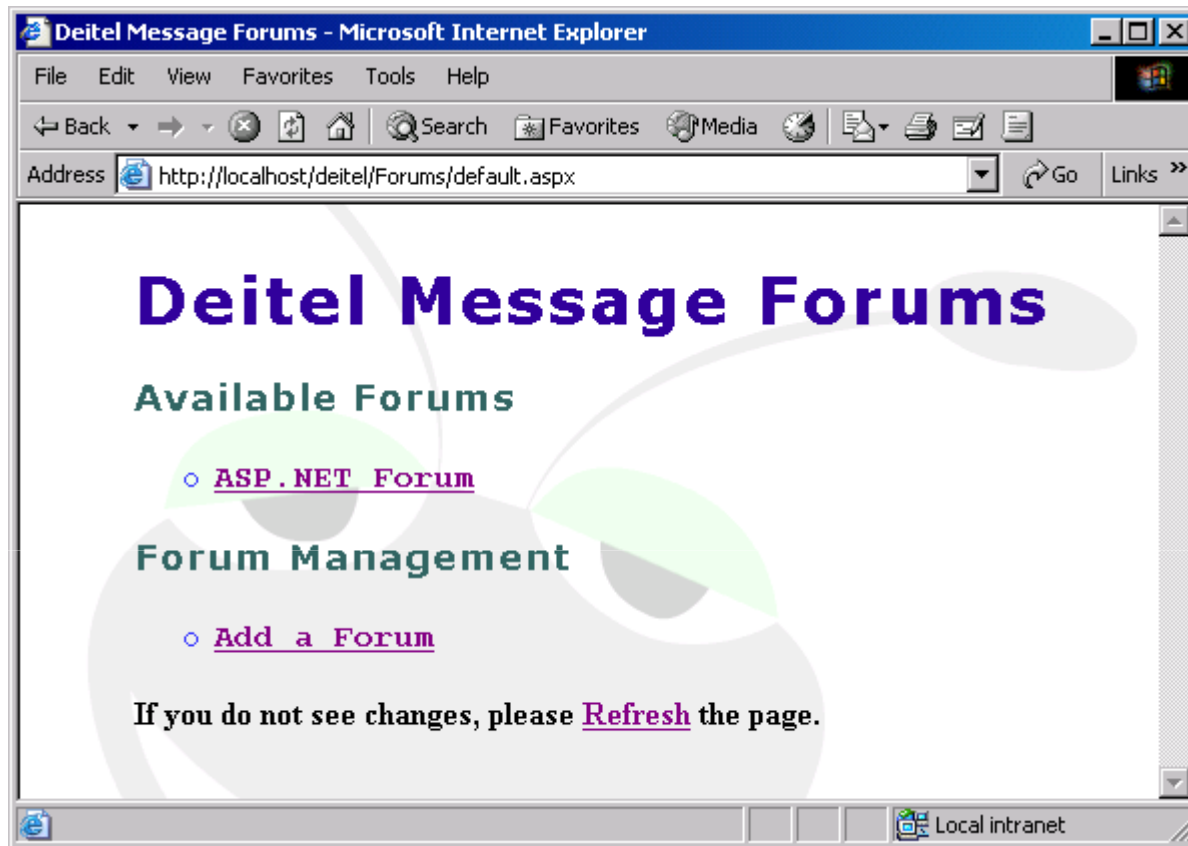
forums.xml
(1 of 1)


```
1 <%@ Page Language="JScript" %>
2 <%@ Import Namespace="System" %>
3 <%@ Import Namespace="System.Data" %>
4 <%@ Import Namespace="System.Xml" %>
5
6 <!-- Fig. 24.4: default.aspx -->
7 <!-- Forum home page. -->
8
9 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
10     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
11
12 <html xmlns = "http://www.w3.org/1999/xhtml">
13
14     <head>
15         <title>Deitel Message Forums</title>
16         <link rel = "stylesheet" type = "text/css"
17             href = "style.css" />
18     </head>
19
20     <body>
21         <h1>Deitel Message Forums</h1>
22         <p><strong>Available Forums</strong></p>
23
24         <form runat = "server">
25             <ul>
```

default.aspx
(1 of 2)

```
26     <asp:Xml runat = "server"
27         DocumentSource = "forums.xml"
28         TransformSource = "forums.xsl" />
29     </ul>
30 </form>
31
32 <p><strong>Forum Management</strong></p>
33
34 <ul>
35     <li><a href = "addForum.aspx">Add a Forum</a></li>
36 </ul>
37
38 <strong>If you do not see changes, please
39     <a href = "JavaScript:window.location.reload()">Refresh</a>
40     the page.</strong>
41 </body>
42 </html>
```

**default.aspx
(2 of 2)**



```
1 <?xml version = "1.0"?>
2
3 <!-- Fig. 24.5: forums.xsl      -->
4 <!-- XSL document that transforms -->
5 <!-- forums XML data to XHTML  -->
6
7 <xsl:transform version = "1.0"
8   xmlns:xsl = "http://www.w3.org/1999/XSL/Transform">
9
10  <xsl:template match = "forum">
11    <li>
12      <a href = "{@filename}">
13        <xsl:value-of select = "." />
14      </a>
15    </li>
16  </xsl:template>
17
18 </xsl:transform>
```

forums.xsl
(1 of 1)

24.4 Adding Forums

- `XmlTextWriter` class
 - Methods and properties for writing XML to a file
 - `writeStartDocument`
 - Writes the start of document
 - `writeProcessingInstruction`
 - Writes a processing instruction to the XML file
 - `writeStartElement`
 - Write first element and names in forum
 - `writeAttributeString`
 - Add attribute `filename`, and assigns it to the text in `fileBox`
 - `writeElementString`
 - Creates opening and closing tags of element name and inserts value of `nameBox`
 - `writeEndElement`
 - Closes most recently declared unclosed element by outputting `/>`
 - `writeFullEndElement`
 - Write full closing tag to close root element

```
1 <?xml version="1.0"?>
2
3 <!-- Fig. 24.6: forumASP.xml -->
4 <!-- Sample ASP.NET forum -->
5
6 <?xml-stylesheet type = 'text/xsl' href = 'formatting.xsl'?>
7 <forum filename="forumASP.xml">
8     <name>ASP.NET Forum</name>
9     <message timestamp="8/13/2003 2:03:07 PM">
10         <user>D. Bug</user>
11         <title>I Love ASP.NET</title>
12         <text>Everyone should use ASP.NET.</text>
13     </message>
14     <message timestamp="8/13/2003 2:03:38 PM">
15         <user>Ms. Quito</user>
16         <title>ASP.NET and XML</title>
17         <text>What a powerful combination. Try it!</text>
18     </message>
19     <message timestamp="8/13/2003 2:04:08 PM">
20         <user>Sarge Ant</user>
21         <title>ASP.NET</title>
22         <text>This army ant uses ASP.NET in boot camp.</text>
23     </message>
24 </forum>
```

forumASP.xml
(1 of 1)

```

1 <%@ Page Language="JScript" Debug="true" %>
2 <%@ Import Namespace="System.Data" %>
3 <%@ Import Namespace="System.Xml" %>
4
5 <!-- Fig. 24.7: addForum.aspx -->
6 <!-- Adds a forum and creates the -->
7 <!-- first message in that forum. -->
8
9 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.1//EN"
10     "http://www.w3.org/TR/xhtml11/DTD/xhtml11.dtd">
11
12 <html xmlns = "http://www.w3.org/1999/xhtml">
13     <head>
14         <title>Add a Forum</title>
15         <link rel = "stylesheet"
16             type = "text/css" href = "style.css" />
17
18         <script language = "JScript" runat = "server">
19
20             function submitButton_Click( sender : Object,
21                 events : EventArgs ) : void
22             {
23                 // create file to hold messages for the new forum
24
25                 var physicalPath : String = Server.MapPath( "" );

```

addForum.aspx
(1 of 7)

```
26     physicalPath = physicalPath + "\\\" + fileBox.Text;
27
28     var writer : XmlTextWriter =
29         new XmlTextWriter( physicalPath, null );
30
31     // indent the file automatically
32     writer.Formatting = Formatting.Indented;
33
34     writer.WriteStartDocument();
35
36     // create processing instruction
37     var PI : String = "type = 'text/xml' href = 'formatting.xml'";
38     writer.WriteProcessingInstruction( "xml-stylesheet", PI );
39
40     // write the root element
41     writer.WriteStartElement( "forum" );
42
43     // give forum an attribute filename
44     writer.WriteAttributeString( "filename", fileBox.Text );
45     writer.WriteElementString( "name", nameBox.Text );
46     writer.WriteStartElement( "message" );
47     writer.WriteAttributeString(
48         "timestamp", DateTime.Now.ToString() );
49
50     writer.WriteElementString( "user", userBox.Text );
```

addForum.aspx
(2 of 7)


```
51     writer.WriteString( "title", titleBox.Text );
52     writer.WriteString( "text", textBox.Text );
53
54     // end the message element
55     writer.WriteEndElement();
56
57     // end the root element
58     writer.WriteFullEndElement();
59
60     writer.Close();
61
62     // add element to forums.xml
63
64     // open an XML document.
65     var forums : XmlDocument = new XmlDocument();
66     forums.Load( Server.MapPath( "forums.xml" ) );
67
68     // create XML element that will represent the post
69     var forumNode : XmlElement = forums.CreateElement( "forum" );
70
71     forumNode.SetAttribute( "filename", fileBox.Text );
72     forumNode.AppendChild(
73         forums.CreateTextNode( nameBox.Text ) );
74
```

addForum.aspx
(3 of 7)

```
75         // insert the new element into the XML tree and save
76         forums.DocumentElement.AppendChild( forumNode );
77         forums.Save( Server.MapPath( "forums.xml" ) );
78
79         Response.Redirect( "default.aspx" );
80     } // end submitButton_Click
81
82     function clearButton_Click( sender : Object,
83         events : EventArgs ) : void
84     {
85         nameBox.Text = "";
86         fileBox.Text = "";
87         userBox.Text = "";
88         titleBox.Text = "";
89         textBox.Text = "";
90     } // end clearButton_Click
91
92     </script>
93 </head>
94
95 <body>
96     <p>Create a Forum</p>
97
98     <form runat = "server">
99
```

addForum.aspx
(4 of 7)

```
100     <h2>
101         Forum Name:<br />
102         <asp:TextBox id = "nameBox" runat = "server"
103             columns = "50">
104         </asp:TextBox>
105     </h2>
106
107     <h2>
108         Forum File Name:<br />
109         <asp:TextBox id = "fileBox" runat = "server"
110             columns = "50">
111         </asp:TextBox>
112     </h2>
113
114     <h2>
115         User:<br />
116         <asp:TextBox id = "userBox" runat = "server"
117             columns = "50">
118         </asp:TextBox>
119     </h2>
120
121     <h2>
122         Message Title:<br />
123         <asp:TextBox id = "titleBox" runat = "server"
124             columns = "50">
```

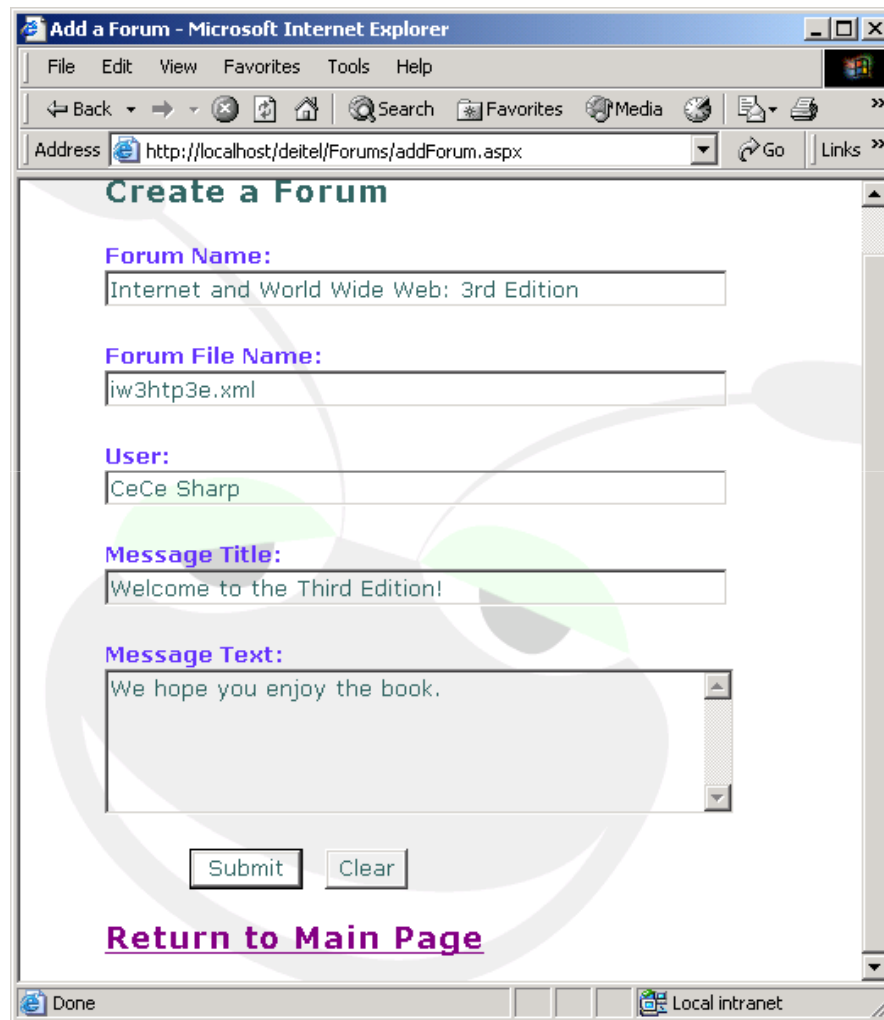
addForum.aspx
(5 of 7)

```
125         </asp:TextBox>
126     </h2>
127
128     <h2>
129         Message Text:<br />
130         <asp:TextBox id = "textBox" runat = "server" rows = "5"
131             textmode = "multiline" columns = "50">
132         </asp:TextBox>
133     </h2>
134
135     <h2>
136         <asp:Button id = "submitButton" OnClick = "submitButton_Click"
137             Text = "Submit" runat = "server"
138             style = "position: absolute; left:100px" />
139
140         <asp:Button id = "clearButton" OnClick = "clearButton_Click"
141             Text = "Clear" runat = "server"
142             style = "position: absolute; left:180px" />
143     </h2>
144
145 </form>
146 <br />
147 <p>
148     <br />
149     <a href = "default.aspx">Return to Main Page</a>
```

addForum.aspx
(6 of 7)

```
150     </p>
151
152     </body>
153 </html>
```

addForum.aspx
(7 of 7)



The screenshot shows a Microsoft Internet Explorer browser window with the title "Add a Forum - Microsoft Internet Explorer". The address bar displays "http://localhost/deitel/Forums/addForum.aspx". The main content area features a form titled "Create a Forum" with the following fields and controls:

- Forum Name:** A text input field containing "Internet and World Wide Web: 3rd Edition".
- Forum File Name:** A text input field containing "iw3htp3e.xml".
- User:** A text input field containing "CeCe Sharp".
- Message Title:** A text input field containing "Welcome to the Third Edition!".
- Message Text:** A text area containing "We hope you enjoy the book."

At the bottom of the form, there are two buttons: "Submit" and "Clear". Below the buttons is a link labeled "Return to Main Page". The browser's status bar at the bottom shows "Done" and "Local intranet".

24.4 Adding Forums

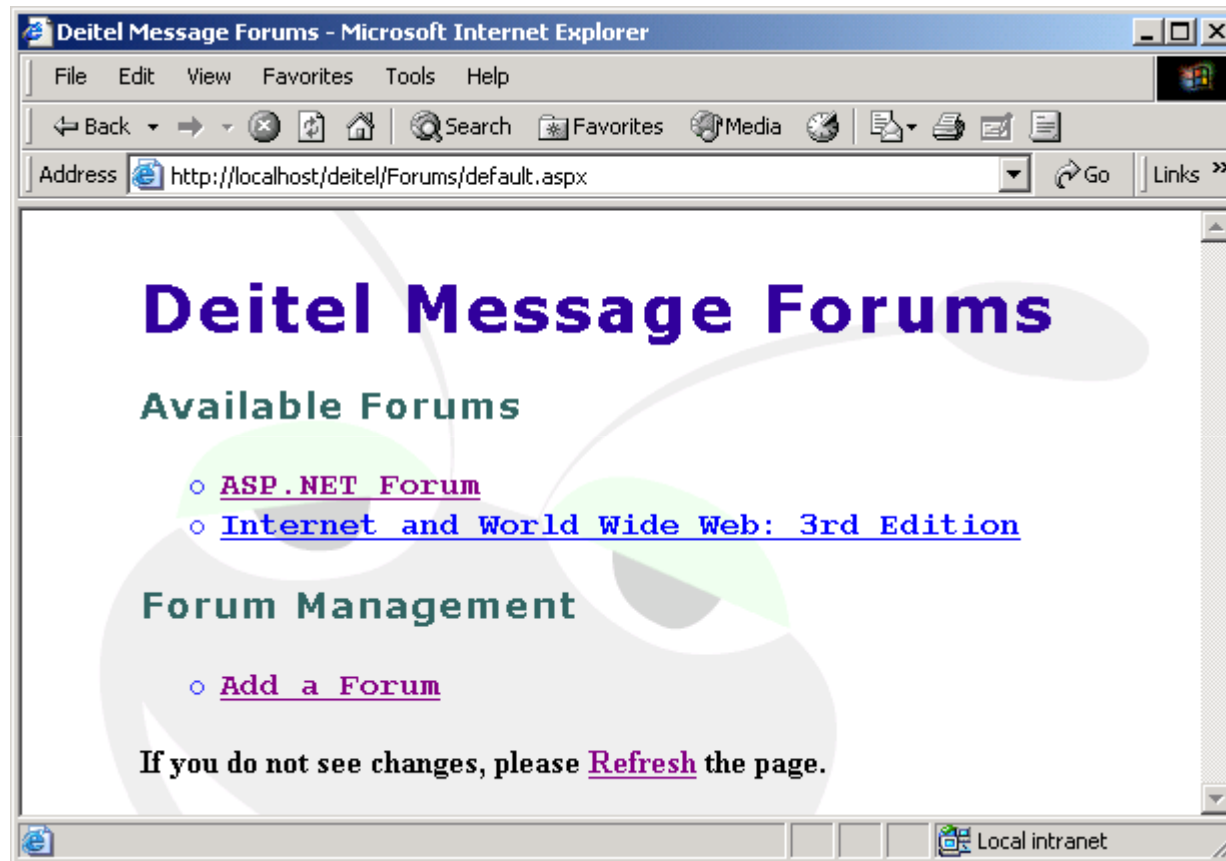


Fig. 24.8 New forum on the message board.

24.4 Adding Forums

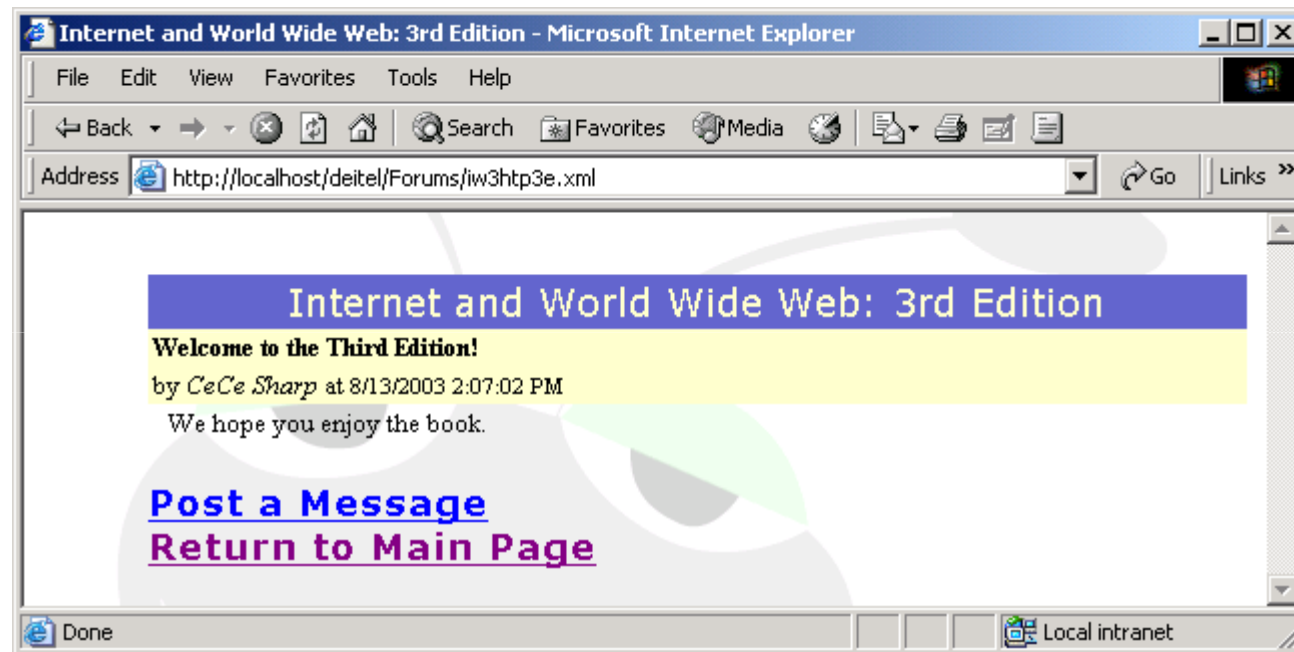


Fig. 24.9 Initial content of the newly added forum.

24.5 Forum XML Documents

- XSLT document that transforms each forum XML document to XHTML


```

1 <?xml version = "1.0"?>
2
3 <!-- Fig. 24.10: formatting.xml -->
4 <!-- XSL document that transforms XML data to XHTML -->
5
6 <xsl:stylesheet version = "1.0"
7   xmlns:xsl = "http://www.w3.org/1999/XSL/Transform">
8
9   <xsl:output method = "html" omit-xml-declaration = "no"
10     doctype-system =
11       "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd"
12     doctype-public = "-//W3C//DTD XHTML 1.0 Strict//EN" />
13
14   <xsl:template match = "/">
15
16     <html xmlns = "http://www.w3.org/1999/xhtml">
17       <xsl:apply-templates select = "*" />
18     </html>
19
20   </xsl:template>
21
22   <xsl:template match = "forum">
23
24     <head>
25       <title><xsl:value-of select = "name" /></title>

```

Formatting.xml (1 of 4)

```
26     <link rel = "stylesheet" type = "text/css"
27         href = "style.css" />
28 </head>
29
30 <body>
31
32     <table width = "100%" cellspacing = "0"
33         cellpadding = "2">
34         <tr>
35             <td class = "forumTitle">
36                 <xsl:value-of select = "name" />
37             </td>
38         </tr>
39     </table>
40
41     <table width = "100%" cellspacing = "0"
42         cellpadding = "2">
43         <xsl:apply-templates
44             select = "message" />
45     </table>
46
47     <p>
48         <a>
49             <xsl:attribute name = "href">
50                 addPost.aspx?file=<xsl:value-of
```

Formatting.xsl (2 of 4)

```
51         select = "@filename" />
52     </xsl:attribute>
53     Post a Message</a><br />
54     <a href = "default.aspx">Return to Main Page</a>
55 </p>
56 <strong>If you do not see changes, please
57     <a href = "JavaScript:window.location.reload()">Refresh</a>
58     the page.</strong>
59 </body>
60
61 </xsl:template>
62
63 <xsl:template match = "message">
64
65     <tr>
66         <td class = "msgTitle">
67             <xsl:value-of select = "title" />
68         </td>
69     </tr>
70
71     <tr>
72         <td class = "msgInfo">
73             by
74             <em><xsl:value-of select = "user" /></em>
75             at
```

Formatting.xsl (3 of 4)

```
76         <span class = "date">
77             <xsl:value-of select = "@timestamp" />
78         </span>
79     </td>
80 </tr>
81
82 <tr>
83     <td class = "msgText">
84         <xsl:value-of select = "text" />
85     </td>
86 </tr>
87
88 </xsl:template>
89
90 </xsl:stylesheet>
```

**Formatting.xsl
(4 of 4)**

```
1 <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
2   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
3
4 <!-- Fig. 24.11: forumASP-output.html -->
5 <!-- XHTML produced by applying formatting.xml to forumASP.xml -->
6
7 <html xmlns = "http://www.w3.org/1999/xhtml">
8
9   <head xmlns = "">
10     <title>ASP.NET Forum</title>
11     <link rel = "stylesheet" type = "text/css" href = "style.css">
12   </head>
13
14   <body xmlns = "">
15     <table width = "100%" cellspacing = "0" cellpadding = "2">
16       <tr>
17         <td class = "forumTitle">ASP.NET Forum</td>
18       </tr>
19     </table>
20
21     <table width = "100%" cellspacing = "0" cellpadding = "2">
22       <tr>
23         <td class = "msgTitle">I Love ASP.NET</td>
24       </tr>
25       <tr>
```

**forumASP-
output.html
(1 of 4)**

```
26     <td class = "msgInfo">
27         by
28         <em>D. Bug</em>
29         at
30         <span class = "date">8/13/2003 2:03:07 PM</span>
31     </td>
32 </tr>
33 <tr>
34     <td class = "msgText">Everyone should use ASP.NET.</td>
35 </tr>
36 <tr>
37     <td class = "msgTitle">ASP.NET and XML</td>
38 </tr>
39 <tr>
40     <td class = "msgInfo">
41         by
42         <em>Ms. Quito</em>
43         at
44         <span class = "date">8/13/2003 2:03:38 PM</span>
45     </td>
46 </tr>
47 <tr>
48     <td class = "msgText">what a powerful combination. Try it!
49     </td>
50 </tr>
```

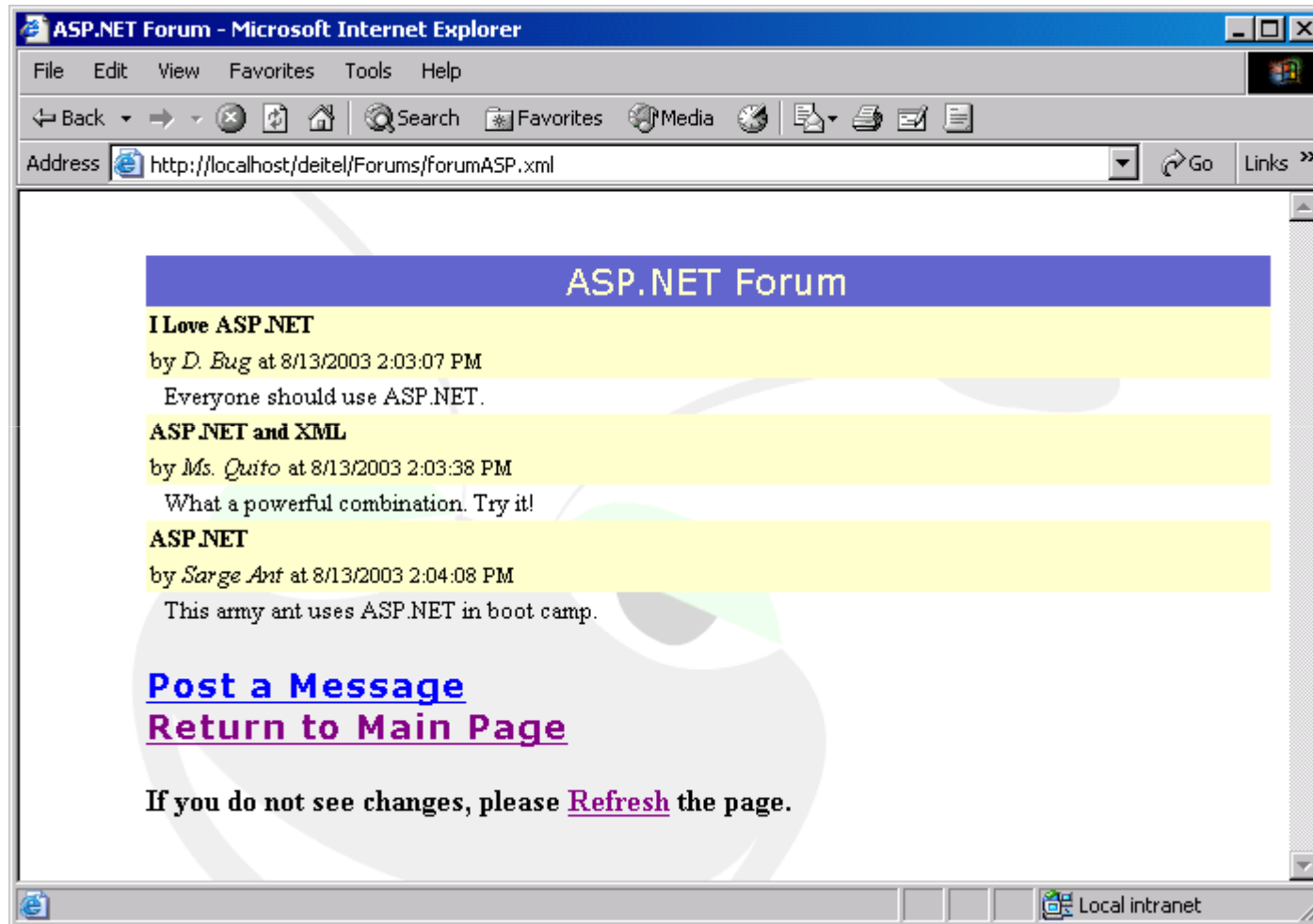
forumASP-
output.html
(2 of 4)

```
51     <tr>
52         <td class = "msgTitle">ASP.NET</td>
53     </tr>
54     <tr>
55         <td class = "msgInfo">
56             by
57             <em>Sarge Ant</em>
58             at
59             <span class = "date">8/13/2003 2:04:08 PM</span>
60         </td>
61     </tr>
62     <tr>
63         <td class = "msgText">This army ant uses ASP.NET in boot camp.
64     </td>
65 </tr>
66 </table>
67
68 <p>
69     <a href = "addPost.aspx?file=forumASP.xml">
70         Post a Message</a><br>
71     <a href = "default.aspx">Return to Main Page</a><br>
72 </p>
73
74 <strong>If you do not see changes, please
75     <a href = "JavaScript:window.location.reload()">Refresh</a>
```

forumASP-
output.html
(3 of 4)

```
76     the page.</strong>
77
78     </body>
79 </html>
```

forumASP-
output.html
(4 of 4)



24.6 Posting Messages

- `addPost.aspx`
 - Posts message to a forum
- `Request.QueryString`
 - Access to variables passed through the query string

```

1 <%@ Page Language="JScript" Debug="true" %>
2 <%@ Import Namespace="System.Data" %>
3 <%@ Import Namespace="System.Xml" %>
4
5 <!-- Fig. 24.12: addPost.aspx -->
6 <!-- Adds a post to a forum -->
7
8 <html>
9     <head>
10         <title>Add a message</title>
11
12         <link rel = "stylesheet" type = "text/css"
13             href = "style.css" />
14
15         <script language = "JScript" runat = "server">
16
17             function submitButton_Click( sender : Object,
18                 events : EventArgs ) : void
19             {
20                 var virtualPath : String = Request.QueryString( "file" );
21                 var physicalPath : String =
22                     Server.MapPath( virtualPath );
23
24                 // open an XML document
25                 var myDocument : XmlDocument = new XmlDocument();

```

addPost.aspx
(1 of 5)

```
26     myDocument.Load( physicalPath );
27
28     // create XML element that will represent the post
29     var messageNode : XmlElement =
30         myDocument.CreateElement( "message" );
31
32     messageNode.SetAttribute( "timestamp",
33         DateTime.Now.ToString() );
34
35     var userNode : XmlElement =
36         myDocument.CreateElement( "user" );
37     var titleNode : XmlElement =
38         myDocument.CreateElement( "title" );
39     var textNode : XmlElement =
40         myDocument.CreateElement( "text" );
41
42     userNode.AppendChild(
43         myDocument.CreateTextNode( user.Text ) );
44     titleNode.AppendChild(
45         myDocument.CreateTextNode( title.Text ) );
46     textNode.AppendChild(
47         myDocument.CreateTextNode( text.Text ) );
48
49     messageNode.AppendChild( userNode );
50     messageNode.AppendChild( titleNode );
```

**addPost.aspx
(2 of 5)**

```
51     messageNode.AppendChild( textNode );
52
53     // insert the new element into the XML tree and save
54     myDocument.DocumentElement.AppendChild( messageNode );
55     myDocument.Save( physicalPath );
56
57     Response.Redirect( virtualPath );
58 } // end submitButton_Click
59
60 function clearButton_Click( sender : Object,
61     events : EventArgs ) : void
62 {
63     user.Text = "";
64     title.Text = "";
65     text.Text = "";
66 } // end clearButton_Click
67
68 </script>
69 </head>
70 <body>
71
72     <p>My Message Forum</p>
73
74     <hr />
75     <form runat = "server">
```

addPost.aspx
(3 of 5)

```
76     <p>
77         User: <br />
78         <asp:TextBox id = "user" columns = "50" runat = "server" />
79     </p>
80     <p>
81         Message Title: <br />
82         <asp:TextBox id = "title" columns = "50" runat = "server" />
83     </p>
84     <p>
85         Message: <br />
86         <asp:TextBox id = "text" TextMode = "multiLine" columns = "50"
87             Rows = "4" runat = "server" />
88     </p>
89     <p>
90         <asp:Button id = "submitButton" onClick = "submitButton_Click"
91             Text = "Submit" runat = "server"
92             style = "position: absolute; left:100px" />
93
94         <asp:Button id = "clearButton" onClick = "clearButton_Click"
95             Text = "Clear" runat = "server"
96             style = "position: absolute; left:180px" />
97     </p>
98     <br />
99     <p>
100     <br />
```

addPost.aspx
(4 of 5)

```
101         <a href = "default.aspx">Return to Main Page</a>
102     </p>
103 </form>
104
105 </body>
106 </html>
```

**addPost.aspx
(5 of 5)**

The screenshot shows a web browser window titled "Add a message - Microsoft Internet Explorer". The address bar shows the URL: `http://localhost/deitel/Forums/addPost.aspx?file=iw3htp3e.xi`. The page content includes:

- My Message Forum**
- User:**
- Message Title:**
- Message:**
-
- [Return to Main Page](#)

The status bar at the bottom shows "Done" and "Local intranet".

24.6 Posting Messages

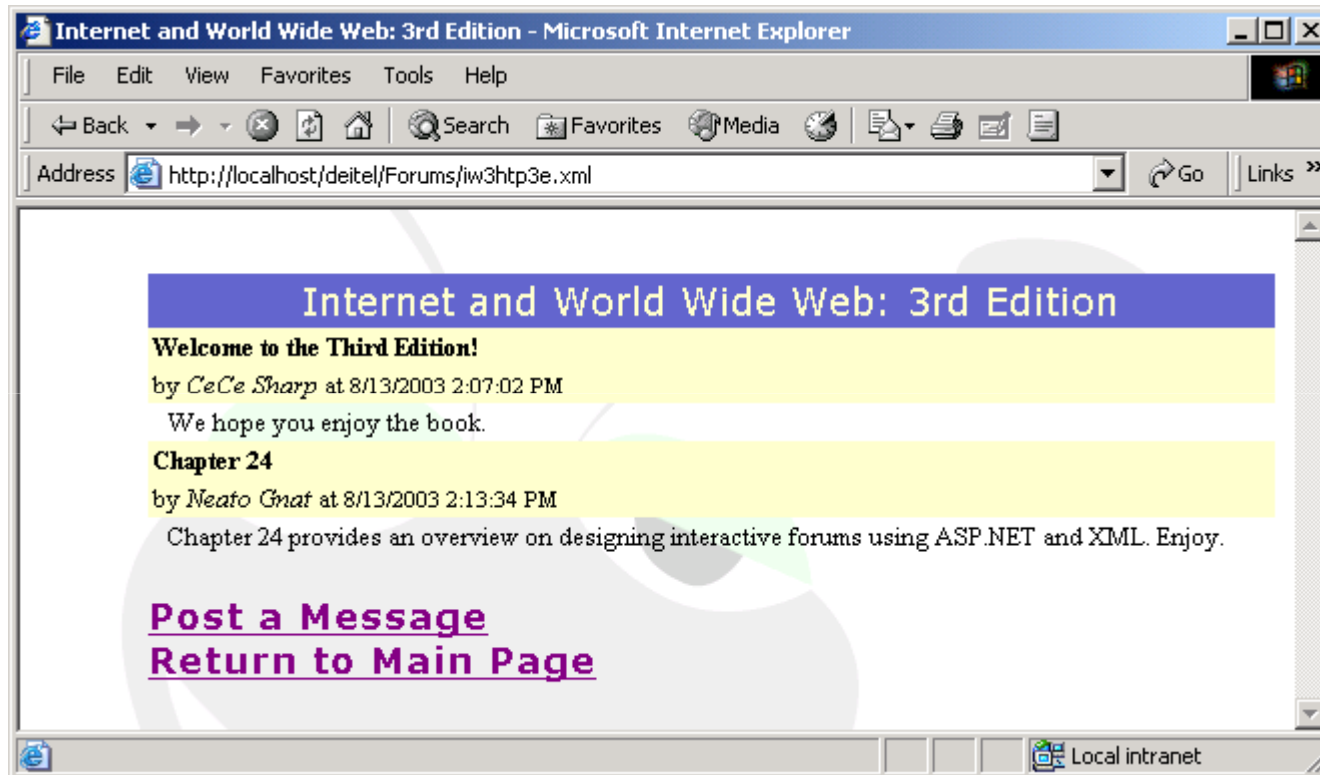


Fig. 24.13 Contents of the **Internet and World Wide Web: 3rd Edition** forum.

24.7 CSS Document for Forum Pages

- CSS document that formats all documents in the forum application


```
1  /* Fig. 24.14: style.css */
2  /* Stylesheet for forums */
3
4  h1
5  {
6      color: #330099;
7      letter-spacing: 2px;
8      font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
9      background-color: transparent;
10 }
11
12 h2
13 {
14     color: #6633FF;
15     font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
16     font-size: small;
17     background-color: transparent;
18 }
19
20 p
21 {
22     font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
23     color: #336666;
24     letter-spacing: 1px;
25     font-size: larger;
```

style.css
(1 of 5)

```
26 font-weight: bold;
27 background-color: transparent;
28 }
29
30 body
31 {
32 background-image: url(bug2.gif);
33 background-repeat: no-repeat;
34 margin-top: 5%;
35 background-position: 25%;
36 margin-left: 10%;
37 }
38
39 li
40 {
41 font-family: "Courier New", Courier, monospace;
42 font-weight: bolder;
43 list-style-type: circle;
44 color: #3333FF;
45 background-color: transparent;
46 }
47
48 input
49 {
50 background-color: transparent;
```

style.css
(2 of 5)

```
51     color: #336666;
52     font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
53 }
54
55 textarea
56 {
57     background-color: transparent;
58     color: #336666;
59     font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
60 }
61
62 .forumTitle
63 {
64     color: #FFFFCC;
65     font-size: 14pt;
66     font-family: Verdana, Geneva, Arial, Helvetica, sans-serif;
67     text-align: center;
68     background-color: #6666CC;
69 }
70
71 .msgTitle
72 {
73     background: #FFFFCC;
74     color: black;
75     font-size: 10pt;
```

style.css
(3 of 5)

```
76     font-weight: bold;
77 }
78
79 .msgInfo
80 {
81     background: #FFFFCC;
82     color: black;
83     font-size: 10pt;
84 }
85
86 .msgPost
87 {
88     background: silver;
89     color: black;
90     font-size: 8pt;
91 }
92
93 .msgText
94 {
95     font-size: 10pt;
96     padding-left: 10px;
97 }
98
```

style.css
(4 of 5)

```
99 .date
100 {
101     font-size: 8pt;
102 }
```

style.css
(5 of 5)

24.8 Web Resources

- aspnet.4guysfromrolla.com/
- www.15seconds.com/focus/XML.htm
- msdn.microsoft.com/library/default.asp
- www.xmlforasp.net