9

Validating User Input

WHAT YOU WILL LEARN IN THIS CHAPTER:

- What user input is and why it's important to validate it
- What ASP.NET 4 has to offer to aid you in validating user input
- How to work with the built-in validation controls and how to create solutions that are not supported out of the box
- How to send e-mail using ASP.NET
- How to read text files

So far you have been creating a fairly static web site where you control the layout and content by adding fixed pages to the site and its navigation menus. But you can make your site a lot more attractive by incorporating dynamic data. This data usually flows in two directions: it either comes from the server and is sent to the end user's browser, or the data is entered by the user and sent to the server to be processed or stored.

Data coming from the server can be retrieved from many different data sources, including files and databases, and is often presented with the ASP.NET data controls. You see how to access databases in Chapter 12 and onward.

The other flow of data comes from the user and is sent to the server. The scope of this information is quite broad, ranging from simple page requests and "Contact Us" forms to complex shopping cart scenarios and wizard-like user interfaces. The underlying principle of this data flow is basically the same in all scenarios — users enter data in a Web Form and then submit it to the server.

To prevent your system from receiving invalid data, it's important to validate this data before you allow your system to work with it. Fortunately, ASP.NET 4 comes with a bag of tools to make data validation a simple task.

The first part of this chapter gives you a good look at the validation controls that ASP.NET supports. You see what controls are available, how to use and customize them, and in what scenarios they are applicable.

The second half of this chapter shows you how to work with data in other ways. You see how to send the information a user submits to your system by e-mail and how to customize the mail body using text-based templates.

By the end of the chapter, you will have a good understanding of the flow of information to an ASP.NET web application and the various techniques you have at your disposal to validate this data.

GATHERING DATA FROM THE USER

Literally every web site on the Internet has to deal with input from the user. Generally, this input can be sent to the web server with a number of different techniques of which GET and POST are the most common. In Chapter 4 you briefly saw the difference between these two methods and saw that GET data is appended to the actual address of the page being requested whereas with the POST method the data is sent in the body of the request for the page.

With the GET method, data is added to the requested address for a page. You can retrieve it using the QueryString property of the Request object as discussed in Chapter 7. Imagine you are requesting the following page:

```
http://www.PlanetWrox.com/Reviews/ViewDetails.aspx?ReviewId=34&CategoryId=3
```

With this example, the query string is ReviewId=34&CategoryId=3. The question mark is used to separate the query string from the rest of the address, and the query string itself consists of name/value pairs separated by an ampersand (&). Each name and value in turn are separated by the equals symbol (=). To access individual items in the query string, you can use the Get method of the QueryString collection:

VB.NET

```
' Assigns the value 34 to the reviewId variable
Dim reviewId As Integer = Convert.ToInt32(Request.QueryString.Get("ReviewId"))
' Assigns the value 3 to the categoryId variable
Dim categoryId As Integer = Convert.ToInt32(Request.QueryString.Get("CategoryId"))
```

C#

```
// Assigns the value 34 to the reviewId variable
int reviewId = Convert.ToInt32(Request.QueryString.Get("ReviewId"));
// Assigns the value 3 to the categoryId variable
int categoryId = Convert.ToInt32(Request.QueryString.Get("CategoryId"));
```

The POST method, on the other hand, gets its data from a form with controls that have been submitted to the server. Imagine you have a form with two controls: a TextBox called Age to hold the user's age and a `Button` to submit that age to the server. In the `Button` control's `Click` event you could write the following code to convert the user's input to an integer:

VB.NET

```
Dim age As Integer = Convert.ToInt32(Age.Text) ' age now holds the user's age
```

C#

```
int age = Convert.ToInt32(Age.Text);           // age now holds the user's age
```

Note that in this case, there is no need to access a collection like `Form` as you saw with the `QueryString` earlier. ASP.NET shields you from the complexity of manually retrieving data from the submitted form, and instead populates the various controls in your page with the data from the form.

All is well as long as users enter values that look like an age in the text box. But what happens when a user submits invalid data, either deliberately or by accident? What if a user sends the text *I am 38* instead of just the number 38? When that happens, the code will crash. The `ToInt32` method of the `Convert` class *throws an exception* (an error) when you pass it something that cannot be represented as a number. As soon as the exception is thrown, page execution stops completely. Chapter 18 digs deeper into exception handling.

To avoid these problems, you need to validate all the data that is being sent to the server. When it doesn't look valid, you need to reject it and make sure your application deals with it gracefully.

Validating User Input in Web Forms

People concerned with validating user input often use the mantra: *Never trust user input*. Although this may seem like paranoia at first, it is really important in any open system. Even if you think you know who your users are and even if you trust them completely, they are often not the only users that can access your system. As soon as your site is out on the Internet, it's a potential target for malicious users and hackers who will try to find a way into your system. In addition to these evil visitors, even your trustworthy users may send incorrect data to your server by accident.

To help you overcome this problem as much as possible, ASP.NET ships with a range of *validation controls* that help you validate data, before it is used in your application. In the following sections, you see how to use the standard validation controls to ensure the user submits valid data into the system.

The ASP.NET Validation Controls

ASP.NET 4 comes with six useful controls to perform validation in your web site. Five of them are used to perform the actual validation whereas the final control — the `ValidationSummary` – is used to provide feedback to the user about any errors made in the page. Figure 9-1 shows the available controls in the Validation category of the Toolbox.

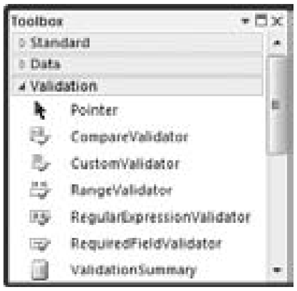
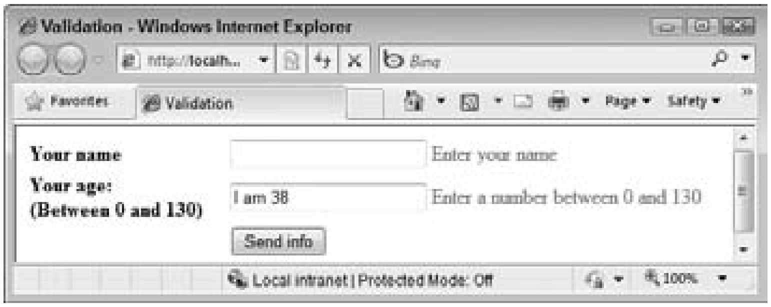


FIGURE 9-1

The validation controls are extremely helpful in validating the data that a user enters in the system. They can easily be hooked to other controls like the `TextBox` or a `DropDownList`; however, they also support custom validation scenarios. Figure 9-2 demonstrates two of the validation controls — `RequiredFieldValidator` and `RangeValidator` — at work to prevent a user from submitting the form without entering required and valid data.


Validation - Windows Internet Explorer
http://localh...
Bing
Favorites
Validation
Page
Safety
Send info
Local intranet | Protected Mode: Off
100%

Your name
Enter your name

Your age:
(Between 0 and 130)
I am 38
Enter a number between 0 and 130

FIGURE 9-2

The great thing about the validation controls is that they can check the input at the client and at the server. When you add a validation control to a web page, the control renders JavaScript that validates the associated control at the client. This client-side validation works on most modern web browsers with JavaScript enabled, including Internet Explorer, Firefox, Chrome, Opera, and Safari. At the same time, the validation is also carried out at the server automatically. This makes it easy to provide your user with immediate feedback about the data using client-side script, while your web pages are safe from bogus data at the server.

A Warning on Client-Side Validation

Although client-side validation may seem enough to prevent users from sending invalid data to your system, you should never rely on it as the only solution to validation. It's easy to disable JavaScript in the browser, rendering the client-side validation routines useless. In addition, a malicious user can easily bypass the entire page in the browser and send information directly to the server, which will happily accept and process it if you don't take countermeasures.

In general, you should see client-side validation as a courtesy to your users. It gives them immediate feedback so they know they forgot to enter a required field, or entered incorrect data without a full postback to the server. Server-side validation, on the other hand, is the only real means of validation. It's effectively the only way to prevent invalid data from entering your system.

The following section discusses how you can employ the validation controls to protect your data.

Using the Validation Controls

To declare a validation control in your ASPX page, you use the familiar declarative syntax. For example, to create the `RequiredFieldValidator` control used in Figure 9-2, you need the following code:

```
<asp:RequiredFieldValidator ID="ReqVal1" runat="server" ControlToValidate="TextBox1"
          ErrorMessage="Enter your name" />
```

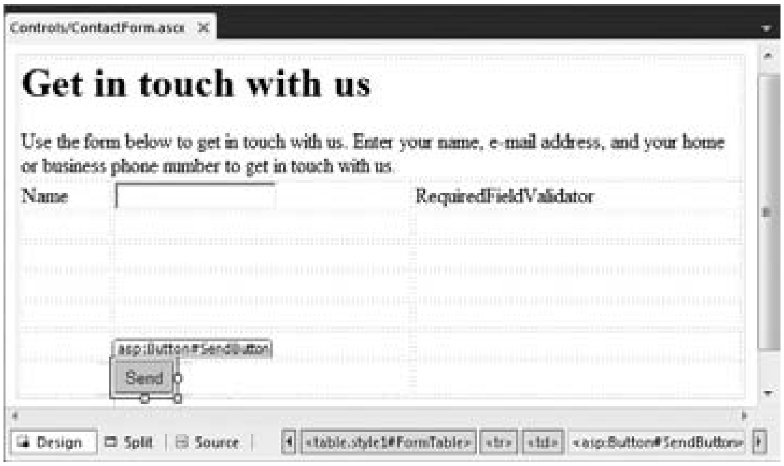
To give you an idea of how the validation controls work, the following exercise guides you through the process of using the RequiredFieldValidator in a contact form that is placed in a user control. The exercise is followed by an in-depth discussion of the various validation controls.

> ***NOTE*** *Visual Web Developer comes with a number of useful code snippets that enable you to quickly insert controls like the validation controls in Markup View. In the following exercise, you see how to add the necessary controls using the Toolbox, Design View, and drag and drop, but it's useful to know how to quickly add controls in Markup View as well. For example, to insert a* TextBox *in Markup View, type* textbox *and then press Tab. VWD completes the full control code for you. To insert a* RequiredFieldValidator*, type the letters* req*, then press Ctrl+Spacebar to have VWD complete the word* requiredfieldvalidator *for you, and then press Tab again to insert the entire tag. If you do this directly below a* TextBox *control with its ID set, VWD even sets the correct* ControlToValidate *attribute for you. This latter trick doesn't work in the next exercise because the various controls are not directly next to each other, but are placed in separate table cells. VWD still inserts the code for the* RequiredFieldValidator *for you but you need to manually set the* ControlToValidate *property to the ID of the associated* TextBox*.*

TRY IT OUT Using the RequiredFieldValidator

In this exercise you create a user control called ContactForm.ascx. It can be placed in a web page so visitors to your site can leave some feedback. In later exercises you extend the control by sending the response by e-mail to your e-mail account.

1. Open the Planet Wrox project and add a new user control in the Controls folder. Call the control ContactForm.ascx. Make sure it uses your programming language and a Code Behind file.
2. Switch to Design View and insert a table by choosing Table ➪ Insert Table. Create a table with eight rows and three columns.
3. Merge the three cells of the first row. To do this, select all three cells, right-click the selection, and choose Modify ➪ Merge Cells.
4. In the merged cell, type some text that tells your users they can use the contact form to get in touch with you.
5. In the first cell of the second row type the word **Name**. Into the second cell of the same row, drag a TextBox and set its ID to Name. Into the last cell of the same row, drag a RequiredFieldValidator from the Validation category of the Toolbox. Finally, into the second cell of the last row, drag a Button. Rename the button to SendButton by setting its ID and set its Text property to Send. When you're done, your Design View looks like Figure 9-3.



Get in touch with us

Use the form below to get in touch with us. Enter your name, e-mail address, and your home or business phone number to get in touch with us.

FIGURE 9-3

6. Click the `RequiredFieldValidator` once in Design View and then open up its Properties Grid by pressing F4. Set the following properties on the control.

PROPERTY	VALUE
`CssClass`	ErrorMessage
`ErrorMessage`	Enter your name
`Text`	*
`ControlToValidate`	Name

7. Save the changes to the user control and then close it because you're done with it for now.

8. Add the following CSS declaration to the CSS files for both themes (`Monochrome.css` and `DarkGrey.css`):

```
.ErrorMessage
{
  color: red;
}
```

Save and close both files.

9. Open `Contact.aspx` from the `About` folder and switch to Design View. From the Solution Explorer, drag the user control `ContactForm.ascx` into the main content area of the page, identified by the purple border. Switch back to Markup View, and you should see this control declaration:

```
<asp:Content ID="Content2" ContentPlaceHolderID="cpMainContent" Runat="Server">
  <uc1:ContactForm ID="ContactForm1" runat="server" />
</asp:Content>
```

10. Save the page and press Ctrl+F5 to open it in your browser. If you get an error, make sure you renamed the `TextBox` to `Name` and that you set the `ControlToValidate` property on the `RequiredFieldValidator` to `Name`.

11. Leave the Name text box empty and click the Send button. Note that the page is not submitted to the server. Instead, you should see a red asterisk appear at the very right of the row for the name field to indicate an error. If the asterisk is not red, press Ctrl+F5 or Ctrl+R to get a fresh copy of the theme's CSS file from the server and click the Send button again.

12. Enter your name and click Send again. The page now successfully posts back to the server.

How It Works

With the `RequiredFieldValidator` attached to the `TextBox` through the `ControlToValidate` property, client-side JavaScript is sent to the browser that validates the control at the client.

> ***NOTE*** *This is the first chapter where you'll actually write some JavaScript on your own. Don't worry about it too much because you won't have to write a whole lot of it. The examples should be pretty easy to follow, even if you don't have any prior experience with JavaScript. If you want to learn more about JavaScript, consider getting a copy of* Professional JavaScript for Web Developers, 2nd Edition *by Nicholas C. Zakas (Wrox, ISBN: 978-0-470-22780-0).*

The `RequiredFieldValidator` control is able to validate another control like a `TextBox`. It does this by comparing the value of the other control with its own `InitialValue` property and making sure that the other control's value is different. By default, this property is an empty string, which means that anything except an empty string is considered a valid value. Whenever you try to submit the form to the server by clicking the Send button, the validation control checks the control it is attached to. When the text box is still empty, the asterisk from its `Text` property is shown (formatted with the `ErrorMessage` CSS class), and the form is not submitted. You see how to use and display the `ErrorMessage` property later in this chapter. When the user enters something in the `Name` text box, validation succeeds and the page submits to the server successfully.

Besides the `RequiredFieldValidator` control, the Validation category of the Toolbox contains a number of other controls that are discussed next.

The Standard Validation Controls

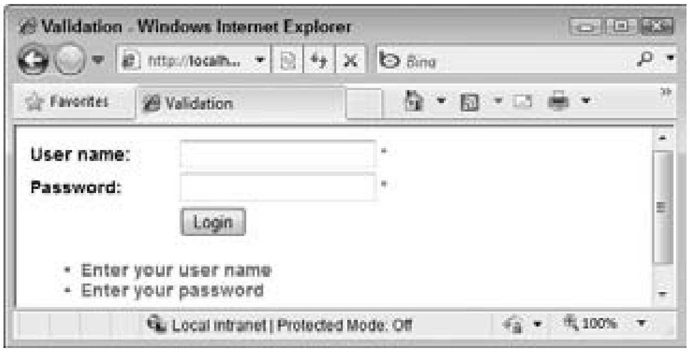
The five validation controls (the ones in the Validation category of the Toolbox whose names end in `Validator`) ultimately all inherit from the same base class, and thus share some common behavior. Four of the five validation controls operate in the same way, and contain built-in behavior that enables you to validate associated controls. The last control, the `CustomValidator`, enables you to write custom validation rules not supported out of the box.

The following table lists a number of common properties that are shared by the validation controls and that you typically use when working with them.

PROPERTY	DESCRIPTION
`Display`	This property determines whether or not the hidden error message takes up space. With the `Display` set to `Static`, the error message takes up screen estate, even when it is hidden. This is similar to the CSS setting `visibility: hidden` you saw in earlier chapters. The `Dynamic` setting hides the error message using `display: none` until it needs to be displayed. With a setting of `None`, the error message is not visible at all. This is useful if you are using a `ValidationSummary`, which you see later in this chapter.
`CssClass`	This property enables you to set the CSS `class` attribute that is applied to the error message text.
`ErrorMessage`	This property holds the error message used in the `ValidationSummary` control. When the `Text` property is empty, the `ErrorMessage` value is also used as the text that appears on the page.
`Text`	The `Text` property is used as the text that the validation control displays on the page. This could be an asterisk (*) to indicate an error, or text like “Enter your name.”
`ControlToValidate`	This property contains the server ID of the control that needs to be validated.
`EnableClientScript`	This property determines whether the control provides validation at the client. The default is `True`.
`SetFocusOnError`	This property determines whether client-side script gives the focus to the first control that generated an error. This setting is `False` by default.
`ValidationGroup`	Validation controls can be grouped together, enabling you to perform validation against a selection of controls. All controls with the same `ValidationGroup` are checked at the same time, which means that controls that are not part of that group are not checked. Consider, for example, a login page with a Login button and fields for a user name and password. The same page may also contain a search box that enables you to search the site. With the `ValidationGroup`, you can have the Login button validate the user name and password boxes, whereas the Search button triggers validation for just the search box.
`IsValid`	You don’t typically set this property at design time, but at runtime it provides information about whether the validation test has passed.

The Difference between the Text and ErrorMessage Properties

At first glance, these two properties seem to serve the same purpose. Both of them can be used to provide feedback to the user in the form of an error message. But when used in combination with a `ValidationSummary` control, there's a subtle difference between the two. When you set both the properties at the same time, the validation control displays the `Text` property, whereas the `ValidationSummary` uses the `ErrorMessage`. Figure 9-4 shows a sample login page with two `RequiredFieldValidator` controls. Both the validation controls have their `Text` property set to an asterisk (`*`) to give the user a visual cue there is a problem. The `ValidationSummary` below the control then displays the full `ErrorMessage` properties.


Validation - Windows Internet Explorer
http://localh...
Bing
Favorites
Validation
Login
Local intranet | Protected Mode: Off
100%

User name: *
Password: *

- Enter your user name
- Enter your password

FIGURE 9-4

You've already seen the `RequiredFieldValidator` at work, so the next sections give you a good look at the three remaining standard validation controls. A later section then shows you how to use the `CustomValidator` and the `ValidationSummary` controls.

RangeValidator

The `RangeValidator` control enables you to check whether a value falls within a certain range. The control is able to check data types like strings, numbers, dates, and currencies. For example, you can use it to make sure a number is between 1 and 10, or a selected date falls between today and the next two weeks. The following table lists its most important properties.

PROPERTY	DESCRIPTION
`MinimumValue`	This property determines the lowest acceptable value. For example, when checking an integer number between 1 and 10, you set this property to 1.
`MaximumValue`	This property determines the highest acceptable value. For example, when checking an integer number between 1 and 10, you set this property to 10.
`Type`	This property determines the data type that the validation control checks. This value can be set to `String`, `Integer`, `Double`, `Date`, or `Currency` to check the respective data types.

The following example shows a RangeValidator that ensures the value entered in the Rate text box is a whole number that lies between 1 and 10:

```
<asp:RangeValidator ID="RangeValidator1" runat="server"
    ControlToValidate="Rate" ErrorMessage="Enter a number between 1 and 10"
    MaximumValue="10" MinimumValue="1" Type="Integer" />
```

RegularExpressionValidator

The RegularExpressionValidator control enables you to check a value against a *regular expression* that you set in the ValidationExpression property of the control. Regular expressions offer a compact syntax that enables you to search for patterns in text strings. Regular expressions are a complex subject, but fortunately, Visual Web Developer comes with a few built-in expressions that make it easy to validate values like e-mail addresses and zip codes. If you want to learn more about regular expressions, pick up a copy of Wrox's *Beginning Regular Expressions* by Andrew Watt (ISBN: 978-0-7645-7489-4).

The following example shows a RegularExpressionValidator control that ensures a user enters a value that looks like an e-mail address:

```
<asp:RegularExpressionValidator ID="RegularExpressionValidator1" runat="server"
     ControlToValidate="Email" ErrorMessage="Enter a valid e-mail address"
     ValidationExpression="\w+([-+.']\w+)*@\w+([-.]\w+)*\.\w+([-.]\w+)*" />
```

CompareValidator

The CompareValidator can be used to compare the value of one control to another value. This is often used in sign-up forms where users have to enter a password twice to make sure they type the same password both times. Instead of comparing to another control, you can also compare against a constant value.

The following table lists the additional properties for the CompareValidator control.

PROPERTY	DESCRIPTION
ControlToCompare	This property contains the ID of the control that the validator compares against. When this property is set, ValueToCompare has no effect.
Operator	This property determines the type of compare operation. For example, when Operator is set to Equal both controls must contain the same value for the validator to be considered valid. Similarly, you have options like NotEqual, GreaterThan, and GreaterThanEqual to perform different validation operations.
Type	This property determines the data type that the validation control checks. This value can be set to String, Integer, Double, Date, or Currency to check the respective data types.

PROPERTY	DESCRIPTION
ValueToCompare	This property enables you to define a constant value to compare against. This is often used in agreements where you have to enter a word like Yes to indicate you agree to some condition. Simply set the ValueToCompare to the word Yes and the ControlToValidate to the control you want to validate and you're done. When this property is set, make sure that the ControlToCompare property is empty because that will otherwise take precedence.

This example shows a CompareValidator that ensures that two TextBox controls contain the same password:

```
<asp:CompareValidator ID="CompareValidator1" runat="server"
    ControlToCompare="ConfirmPassword" ControlToValidate="Password"
    ErrorMessage="Your passwords don't match" />
```

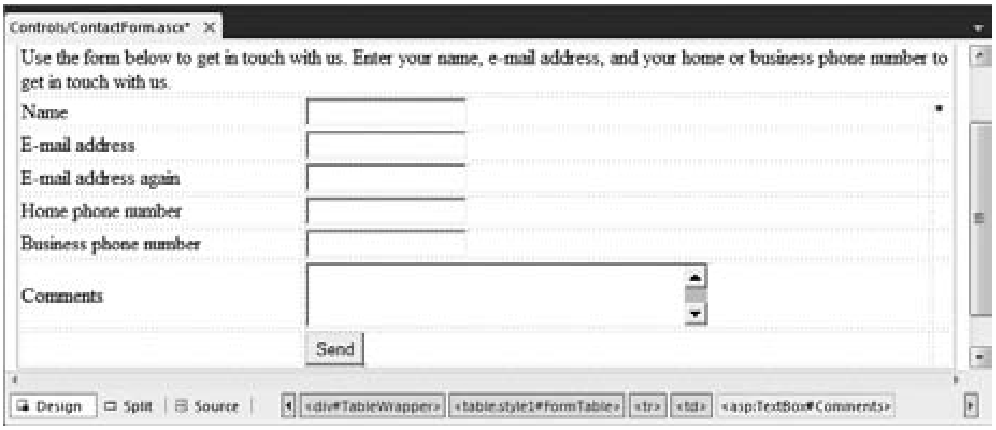
In the following exercise you see most of these controls at work, except for the RangeValidator. However, its usage is similar to the other validation controls, so it's just as easy to add it to your web page or user control when you need it.

TRY IT OUT Extending the Contact Form

In the previous Try It Out you started with the basics for the contact form by creating a user control holding a table and a few controls to let users enter their name. In this exercise, you extend the form and add fields for an e-mail address, a home phone number, and a business phone number. You will use the validation controls to ensure the e-mail address is in a valid format, and that at least one of the two phone numbers is filled in. To make sure users enter a correct e-mail address, they are asked to enter it twice. If you don't like this behavior, you can simply delete the row with the text box for the second e-mail address and ignore the CompareValidator.

1. Open ContactForm.ascx from the Controls folder again and switch it to Design View.
2. In the second column, drag five additional text boxes in the empty table cells between the text box for the name and the Send button. From top to bottom, name the new controls by setting their ID as follows:
    - EmailAddress
    - ConfirmEmailAddress
    - PhoneHome
    - PhoneBusiness
    - Comments
3. Set the TextMode property of the Comments control to MultiLine and then make the control a little wider and taller in the designer so it's easier for a user to add a comment.

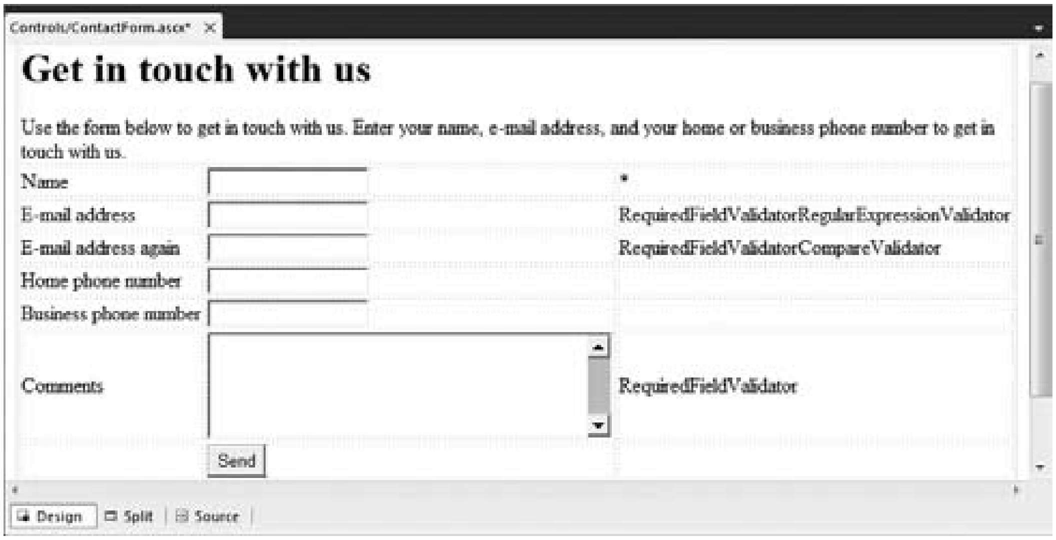
4. In the first cell of the rows to which you added the `TextBox` controls, add the text as shown in Figure 9-5.



Use the form below to get in touch with us. Enter your name, e-mail address, and your home or business phone number to get in touch with us.

FIGURE 9-5

5. In the last cell of the row for the first e-mail address, drag a `RequiredFieldValidator` and a `RegularExpressionValidator`. In the last cell of the row for the second e-mail address, drag a `RequiredFieldValidator` and a `CompareValidator`. Finally, in the last cell for the comments row, drag a `RequiredFieldValidator`. When you're done, your form looks like Figure 9-6.



Get in touch with us

Use the form below to get in touch with us. Enter your name, e-mail address, and your home or business phone number to get in touch with us.

FIGURE 9-6

6. For each of the five validation controls you added, open the Properties Grid and set the `Text` property to an asterisk (`*`), the `Display` property to `Dynamic` and the `CssClass` to `ErrorMessage`. To do this for all controls at once, select the first validator control, then press the Ctrl key and click the others. When you make changes to the Properties Grid while you've selected multiple controls, the changes are applied to all of them.

7. Next, set the remaining properties for the controls as shown in the following table.

CONTROL	PROPERTIES YOU NEED TO SET	
`RequiredFieldValidator` (for the first e-mail address)	`ErrorMessage:`	Enter an e-mail address
	`ControlToValidate:`	`EmailAddress`
`RegularExpressionValidator`	`ErrorMessage:`	Enter a valid e-mail address
	`ControlToValidate:`	`EmailAddress`
`RequiredFieldValidator` (for the second e-mail address)	`ErrorMessage:`	Confirm the e-mail address
	`ControlToValidate:`	`ConfirmEmailAddress`
`CompareValidator`	`ErrorMessage:`	Retype the e-mail address
	`ControlToCompare:`	`EmailAddress`
	`ControlToValidate:`	`ConfirmEmailAddress`
`RequiredFieldValidator` (for the Comments field)	`ErrorMessage:`	Enter a comment
	`ControlToValidate:`	`Comments`

8. Still in Design View, click the `RegularExpressionValidator` once, open its Properties Grid, and locate the `ValidationExpression` property. When you click the property in the grid, the grid shows a button with an ellipsis. When you click that button you get a dialog box that enables you to select a regular expression, shown in Figure 9-7.

9. Click Internet e-mail address from the list and note that VWD inserts a long regular expression in the Validation Expression box. Click OK to add the property to the control and dismiss the dialog box.

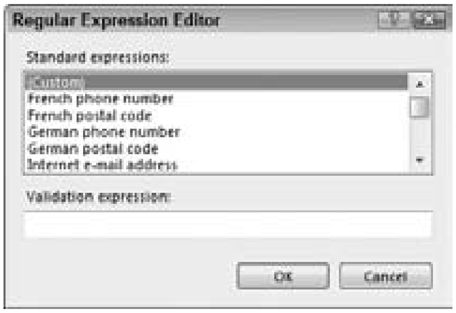


FIGURE 9-7

10. Save all the changes and then request the `Contact.aspx` page from the `About` folder in your browser. If you get errors, make sure you set all the `ControlToValidate` properties on the relevant controls as shown earlier. Play around with the various validation controls by leaving out required data or by entering bogus data. Only when you have entered all required fields and typed the same e-mail address in both text boxes will the page submit to the server. At this stage, you will only see the red asterisks appear to give an indication of the problem. After you have seen how these validators work, you will learn how to use the `ValidationSummary` to provide more detailed information to the user.

How It Works

Just like the RequiredFieldValidator control, the other validation controls emit JavaScript to the client, which is triggered when you click the Send button or when the value of one of the client controls is changed. The CompareValidator works by looking at the value of two different controls. Only when both contain the same data will it return true. It's important to realize that the CompareValidator control does not trigger its validation code when the text boxes are empty. Therefore, it's important to hook up a RequiredFieldValidator control as well. This control first makes sure the user entered at least some data and then the CompareValidator control ensures the text is the same in both text boxes.

The RegularExpressionValidator control works by checking the pattern of the data that it is validating. If you look at the ValidationExpression property of the control, you see a long, cryptic string. This pattern ensures that the e-mail address contains some text, optionally followed by some separation character like a dash (-) or period, followed by more text. It also ensures there's an @ symbol in the address, followed by a domain name, a period, and then at least one more character to represent the top-level domain like .com, .nl, or .co.uk. With this expression, you@yourprovider.com is considered a valid e-mail address. So is a@a.a, whereas you@you isn't.

Note that the RegularExpressionValidator control only roughly checks the syntax of the e-mail address. It's still perfectly possible to enter a non-existent e-mail address that just looks valid or even an invalid e-mail address as a@a.a. However, in many cases, this validator is good enough to filter out common typos that users make when entering e-mail addresses.

The validation controls you have seen so far are very easy to use. You add them to a page, set a few properties, and then they do all the hard work for you. However, they do not support every possible validation scenario you may come up with. For example, what if you wanted to ensure that a user entered at least one of the two phone numbers? And what if you wanted to present your users with a full list of all the errors they made in the form? This is where the CustomValidator and the ValidationSummary controls come in.

The CustomValidator and ValidationSummary Controls

The CustomValidator control enables you to write custom validation functions for both the client (in JavaScript) and the server (using VB.NET or C#). This gives you great flexibility with regard to the data you want to validate and the rules you want to apply.

The ValidationSummary control provides the user with a list of errors that it retrieves from the individual validation control's ErrorMessage properties. It can display these errors in three different ways: using a list embedded in the page, using a JavaScript alert box, or using both at the same time. You control this setting with the ShowMessageBox and ShowSummary properties. Additionally, the DisplayMode property enables you to change the way the list of errors is presented. The default setting is BulletList where each error is an item in a bulleted list, but other options are List (without bullets) and SingleParagraph.

You learn how to write client- and server-side validation methods and how to use the ValidationSummary control in the following exercise.

TRY IT OUT Writing Client- and Server-Side Validation Methods

In this exercise you see how to use the CustomValidator in your page to ensure at least one of the two phone numbers is entered. The validation is carried out at the client and at the server. Additionally, you see how to use the ValidationSummary control to provide feedback to your users about the errors they made in the form.

1. Go back to the ContactForm.ascx user control in VWD and switch it to Design View. Right-click the row with the Button control in it (right-click a cell, not the button) and choose Insert ➪ Row Below from the context menu to insert a new table row. Alternatively, you can click in a cell of the row to select it and then press Ctrl+Alt+down arrow to have the row inserted for you as well.
2. Select the three cells of the row you just inserted with your mouse, right-click them, and choose Modify ➪ Merge Cells to create a single cell that spans all three columns.
3. From the Validation category of the Toolbox, drag a ValidationSummary control into this newly created cell and set its CssClass property to ErrorMessage.
4. In the empty cell after the text box for the Home phone number, drag a CustomValidator control and set the following properties.

PROPERTY	VALUE
CssClass	ErrorMessage
Display	Dynamic
ErrorMessage	Enter your home or business phone number
Text	*
ClientValidationFunction	ValidatePhoneNumbers

5. Double-click the CustomValidator control in Design View to have VWD write an event handler for the ServerValidate event. Add the following code to the handler:

VB.NET

```
Protected Sub CustomValidator1_ServerValidate(ByVal source As Object,
         ByVal args As System.Web.UI.WebControls.ServerValidateEventArgs) _
         Handles CustomValidator1.ServerValidate
  If Not String.IsNullOrEmpty(PhoneHome.Text) Or
               Not String.IsNullOrEmpty(PhoneBusiness.Text) Then
    args.IsValid = True
  Else
    args.IsValid = False
  End If
End Sub
```

C#

```
protected void CustomValidator1_ServerValidate(object source, ServerValidateEventArgs args)
{
  if (!string.IsNullOrEmpty(PhoneHome.Text) ||
              !string.IsNullOrEmpty(PhoneBusiness.Text))
  {
    args.IsValid = true;
  }
  else
  {
    args.IsValid = false;
  }
}
```

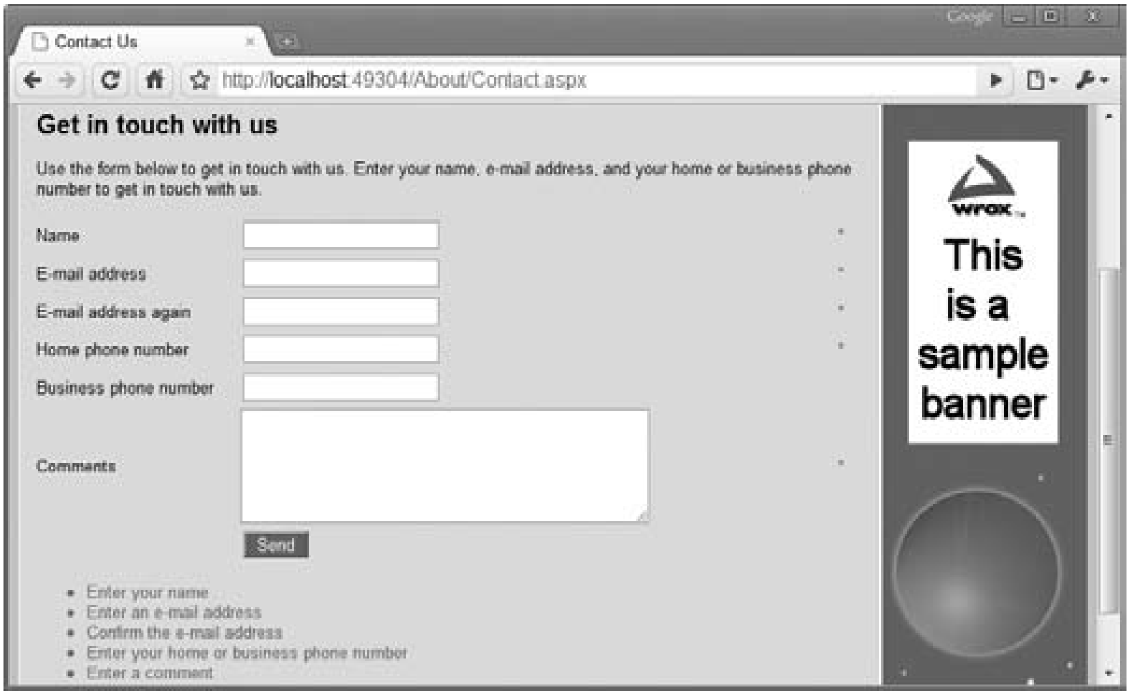
6. Switch to Markup View of the user control and add the following block of JavaScript code right before the table with the controls:

```
<script type="text/javascript">
  function ValidatePhoneNumbers(source, args)
  {
    var phoneHome = document.getElementById('<%= PhoneHome.ClientID %>');
    var phoneBusiness = document.getElementById('<%= PhoneBusiness.ClientID %>');
    if (phoneHome.value != '' || phoneBusiness.value != '')
    {
      args.IsValid = true;
    }
    else
    {
      args.IsValid = false;
    }
  }
</script>
<table class="style1">
```

If you find that VDW is adding your opening curly braces (`{`) at the end of a line, rather than on their own line, choose Tools ➪ Options from the main menu. Then expand the path Text Editor ➪ JScript ➪ Formatting and check off both items in the New Lines category. This is purely a formatting preference; the JavaScript runs fine with or without the curly brace on its own line.

7. Save all the changes by pressing Ctrl+Shift+S and then request the page `Contact.aspx` in your browser. Note that you can't submit the form if you haven't at least entered one of the two phone numbers. Also note that the `ValidationSummary` control shows a list of all the problems with the data entered in the form. The client-side JavaScript function `ValidatePhoneNumbers` now ensures that you enter at least one phone number before you can submit the page back to the server. Figure 9-8 shows how the page ends up in Google Chrome.

8. Go back to VWD and click the `ValidationSummary` control in Design View. On the Properties Grid, change `ShowMessageBox` to `True` and `ShowSummary` to `False`. (Quick tip: you can easily choose the next item in a drop-down list on the Properties Grid by double-clicking the value. For Booleans, this means that if you double-click False it turns to True and vice versa). Also, set its `HeaderText` property to: “Please correct the following errors before you press the Send button:”.



Get in touch with us

Use the form below to get in touch with us. Enter your name, e-mail address, and your home or business phone number to get in touch with us.

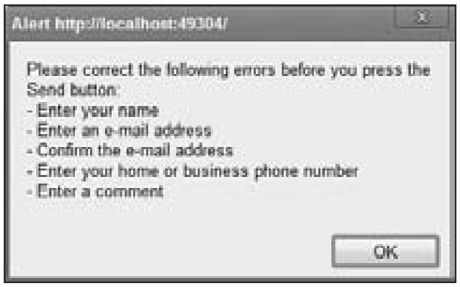
Name *
E-mail address *
E-mail address again *
Home phone number *
Business phone number
Comments *

Send

- Enter your name
- Enter an e-mail address
- Confirm the e-mail address
- Enter your home or business phone number
- Enter a comment

FIGURE 9-8

9. Open the page in the browser again and click the Send button once more. Note that instead of the inline list with errors you now get a client-side alert, shown in Figure 9-9. The list of errors is preceded with the `HeaderText` of the `ValidationSummary`.


Alert http://localhost:49304/

Please correct the following errors before you press the Send button:
- Enter your name
- Enter an e-mail address
- Confirm the e-mail address
- Enter your home or business phone number
- Enter a comment

OK

FIGURE 9-9

How It Works

When you added the `CustomValidator` control, you set up two event handlers: one for the client- and one for the server-side validation check, both in bold in the following snippet:

```
<asp:CustomValidator ID="CustomValidator1" runat="server" ErrorMessage="Enter your
    home or business phone number" ClientValidationFunction="ValidatePhoneNumbers"
  OnServerValidate="CustomValidator1_ServerValidate"
  Display="Dynamic">*</asp:CustomValidator>
```

If you're using VB.NET, you won't see the `OnServerValidate` attribute because that is set up in the Code Behind using the `Handles` keyword.

The JavaScript function `ValidatePhoneNumbers` you set in the `ClientValidationFunction` is triggered at the client when you click the Send button. This function is defined in the markup section of the user control and contains two references to the text boxes for the phone numbers:

```
var phoneHome = document.getElementById('<%= PhoneHome.ClientID %>');
var phoneBusiness = document.getElementById('<%= PhoneBusiness.ClientID %>');
```

The calls to the ClientID are wrapped in a server-side <%= %> block. This code runs at the server, and then returns the ClientID of the control to the client. If you look at the HTML for the Contact page in the browser, you find the following code:

```
function ValidatePhoneNumbers(source, args)
{
  var phoneHome = document.getElementById('cpMainContent_ContactForm1_PhoneHome');
  var phoneBusiness =
         document.getElementById('cpMainContent_ContactForm1_PhoneBusiness');
  if (phoneHome.value != '' || phoneBusiness.value != '')
```

Here you can see how the server-side ClientID properties of the controls have been transformed into their client id counterparts. This is a much better solution than hard-coding the id attributes of the text boxes in the final HTML, because they can easily be changed by the ASP.NET runtime. You saw how and why this happened in the preceding chapter.

To make the final JavaScript in the browser slightly shorter and easier to read, you can use the ClientIDMode property you saw in the preceding chapter to "fix" the IDs of the phone number controls. Because it's unlikely you will have two ContactForm user controls in a single page, you can safely assume you won't end up with two client controls with the same name if you fixate the client control IDs. In order to do this, you need to set the ClientIDMode for these two controls to Static, like this:

```
<asp:TextBox ID="PhoneHome" runat="server" ClientIDMode="Static" />
…
<asp:TextBox ID="PhoneBusiness" runat="server" ClientIDMode="Static" />
```

Because the control IDs are now fixed, they end up as-is in the final HTML:

```
var phoneHome = document.getElementById('PhoneHome');
var phoneBusiness = document.getElementById('PhoneBusiness');
```

Because the controls now have a fixed client ID, you could also get rid of the ClientID property altogether in the JavaScript in the user control and directly use the following code there:

```
var phoneHome = document.getElementById('PhoneHome');
var phoneBusiness = document.getElementById('PhoneBusiness');
```

This may be a bit easier to type and use, but at a cost: if you rename any of these server controls, your code will break without a good error message or warning. So it's still recommended to use the ClientID to get the control's client ID at runtime.

Eventually, the client IDs are passed to the JavaScript function getElementById on the document object to get a reference to their respective text boxes in JavaScript. The code then examines the value properties of these two text box controls. If one of them is not an empty string, the validation succeeds. But how does the ValidatePhoneNumbers method report back to the validation mechanism that the validation succeeded or not? When the ASP.NET validation mechanism calls the ValidatePhoneNumbers method it passes two arguments: source, which is a reference to the actual CustomValidator in the HTML, and args. The args object exposes an IsValid property that enables you to determine whether or not the validation succeeded:

```
if (phoneHome.value != '' || phoneBusiness.value != '')
{
  args.IsValid = true;
}
```

```
else
{
  args.IsValid = false;
}
```

With this code, if both text boxes are empty, `IsValid` is set to `false`, so validation won't succeed, stopping the form from being submitted. If at least one of the text boxes contains a value, `IsValid` is set to `true`. In this example, the `source` argument is not used, but you could use it to highlight or otherwise change the validation control based on whether or not it's valid.

At the server, the `CustomValidator` control calls the server-side validation method, which performs the same check:

VB.NET

```
If Not String.IsNullOrEmpty(PhoneHome.Text)
               Or Not String.IsNullOrEmpty(PhoneBusiness.Text) Then
  args.IsValid = True
Else
  args.IsValid = False
End If
```

C#

```
if (!string.IsNullOrEmpty(PhoneHome.Text) ||
                !string.IsNullOrEmpty(PhoneBusiness.Text)
{
  args.IsValid = true;
}
else
{
  args.IsValid = false;
}
```

By checking the data at the client and at the server, you ensure your system only accepts valid data. Even when the browser doesn't support JavaScript (possibly because the user turned it off deliberately) your data is still checked at the server. However, it's important to realize that you still need to check whether the page is valid before you work with the data submitted to it. You do this by checking the `IsValid` property of the page:

VB.NET

```
If Page.IsValid Then
  ' OK to proceed
End if
```

C#

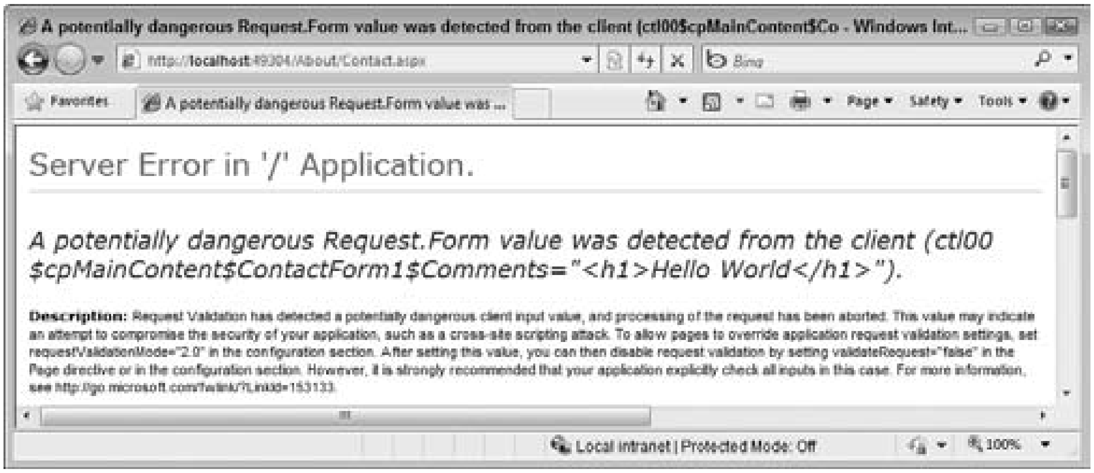
```
if (Page.IsValid)
{
  // OK to proceed
}
```

The `IsValid` property returns `True` when all the controls in the page or in the active `ValidationGroup` are valid. By checking the `IsValid` property on the server before you work with the data, you can be sure that the data is valid according to your validation controls, even if the user turned off JavaScript in the browser, and sent the form to the server without any client-side checks. You see the `IsValid` property used again later in this chapter, when sending e-mail is discussed.

Besides the validation controls you have seen so far, ASP.NET comes with another validation mechanism, which is discussed next.

Understanding Request Validation

By design, an ASP.NET page throws an exception whenever one of the controls on a page contains content that looks like HTML tags. For example, you see the error shown in Figure 9-10 when you enter `<h1>Hello World</h1>` or `<script type="text/javascript">alert('Hello World');</script>` as the contents for the comments text box in the contact form.



A potentially dangerous Request.Form value was detected from the client (ctl00$cpMainContent$Co - Windows Int...

http://localhost:49304/About/Contact.aspx

Server Error in '/' Application.

A potentially dangerous Request.Form value was detected from the client (ctl00$cpMainContent$ContactForm1$Comments="<h1>Hello World</h1>").

Description: Request Validation has detected a potentially dangerous client input value, and processing of the request has been aborted. This value may indicate an attempt to compromise the security of your application, such as a cross-site scripting attack. To allow pages to override application request validation settings, set requestValidationMode="2.0" in the configuration section. After setting this value, you can then disable request validation by setting validateRequest="false" in the Page directive or in the configuration section. However, it is strongly recommended that your application explicitly check all inputs in this case. For more information, see http://go.microsoft.com/fwlink/?LinkId=153133.

Favorites
A potentially dangerous Request.Form value was ...
Bing
Page
Safety
Tools
Local intranet | Protected Mode: Off
100%

FIGURE 9-10

The ASP.NET runtime does this to prevent users from entering HTML or JavaScript that can potentially mess with the design or workings of your web site. If you're sure you want to allow your users to enter HTML, you can disable request validation by setting the `ValidateRequest` attribute in the `@ Page` directive to `False`:

```
<%@ Page .... Inherits="Contact" Title="Contact Us" ValidateRequest="False" %>
```

With this setting set to `False`, users can enter HTML without causing an error. Just make sure you really want to allow users to enter HTML when you set `ValidateRequest` to `False`.

PROCESSING DATA AT THE SERVER

The information that a user inputs on your Web Forms is typically not the only data that makes your web site an interactive, data-driven system. In most web sites, you have information coming from other data sources as well, such as databases, text, XML files, and web services. In addition, there is also data going out of your system. You may want to send an e-mail to the owner of the web site whenever someone posted information through the contact page or you may want to notify people whenever you add a new feature or review to the web site. For these scenarios, it's important to understand how ASP.NET 4 enables you to send e-mail. This is discussed in the next section.

Sending E-mail from Your Web Site

Writing code that sends e-mail from an ASP.NET page is pretty straightforward. Inside the System.Net.Mail namespace you find a number of classes that make it easy to create and send e-mail messages. These classes enable you to create new messages; add addressees in the To, CC, and Bcc fields; add attachments; and, of course, send the messages.

The following table describes four classes that you typically work with when sending e-mail from a .NET application.

CLASS	DESCRIPTION
MailMessage	This class represents the message you're going to send. It has properties such as Subject and Body to set the message contents; To, CC, and Bcc properties to set the addressees; and an Attachments collection to attach files to the message.
MailAddress	This class represents a sender or receiver address used in the e-mail. It has a few constructor overloads that enable you to set the e-mail address and display name.
Attachment	This class represents files you can attach to a MailMessage. When you construct an Attachment instance, you can pass in the name of the file you want to send. You then add the attachment to the MailMessage using the Add method of its Attachments collection.
SmtpClient	This class is used to send the actual message. By default, an instance of this class checks the web.config file for settings such as the SMTP server (which stands for Simple Mail Transfer Protocol) to send the mail to and an optional user name and password that is used for sending e-mail.

Configuring Your Web Site for Sending E-mail

Although the code to send e-mail is pretty easy, configuring your application and network can often be a bit trickier. The machine you are using to send e-mail must be able to access an SMTP server, either locally available on your network or over the Internet. In most cases, you should use the SMTP server that you also use in your e-mail client (for example, Microsoft Outlook). If you're hosting your site with an external hosting party, you need to use the SMTP server they provide. Contact your network administrator or your ISP if you are unsure about your SMTP server.

When you have the address of the SMTP server, you can configure it globally in the web.config file in the <system.net> element. When you are using the SMTP server from your ISP, the configuration setting looks like this:

```
<system.net>
  <mailSettings>
    <smtp deliveryMethod="Network" from="Your Name &lt;you@yourprovider.com&gt;">
      <network host="smtp.yourprovider.com" />
      </smtp>
    </mailSettings>
  </system.net>
  ...
</configuration>
```

The `<system.net>` element must be added as a direct child of the `web.config` file's root element `<configuration>`. Within `<system.net>` you add a `<mailSettings>` element, which in turn contains an `<smtp>` element. Finally, the `<network>` element has a `host` attribute that points to your SMTP server.

The `<smtp>` element accepts an optional `from` attribute that lets you set the name and e-mail address of the sender in the format `Name <E-mail Address>`. Because the angle brackets (< >) in XML have special meaning, you need to escape them with `<` and `>`. When you send e-mail programmatically, you can override this From address as you see in the next Try It Out exercise.

If your ISP requires you to authenticate before you can send the e-mail or they want you to use a different port number, you can add this information to the `<network />` element:

```
<smtp deliveryMethod="Network">
  <network host="smtp.yourprovider.com" userName="UserName" password="Password"
          port="587" />
</smtp>
```

Some mail servers — like the one supplied by Gmail — require you to use SSL, a technique that encrypts the data going to the mail server to improve security. In ASP.NET prior to version 4, you had to enable SSL programmatically in your own code. Fortunately, with the inclusion of the `enableSsl` attribute on the `<network />` element, this is no longer the case. To use a Gmail server or any other mail server that requires SSL, you use a `<network />` element that looks like this:

```
<network enableSsl="true" host="smtp.gmail.com" password="YourPassword"
               userName="YourAccountName@gmail.com" />
```

Don't forget to enter your password and user name — which in the case of Gmail is your full Gmail e-mail address.

During development there's an easier way to handle mail sent by your application: drop it in a folder on your local hard drive directly. To do this, create a folder like `C:\TempMail`. You need to create the folder yourself because it won't be created automatically. Then configure the `<smtp />` element as follows:

```
<smtp deliveryMethod="SpecifiedPickupDirectory">
  <specifiedPickupDirectory pickupDirectoryLocation="C:\TempMail" />
</smtp>
```

With these settings in `web.config`, your messages are not sent over the network, but are dropped as physical files (with an `.eml` extension) in the folder you configured in the `pickupDirectoryLocation` attribute. You can read these files with mail clients like Windows Mail (on Vista) or Windows Live Mail (which you can download from the Internet). I prefer this setting during development over the networked version because mail arrives instantly, and doesn't clutter up my mail account or Inbox.

Refer to the online MSDN documentation at `http://tinyurl.com/yz59sb4` for more information about the different settings that the `<mailSettings>` element takes.

Creating E-mail Messages

To create and send an e-mail message, you need to carry out four steps. First, you need to create an instance of the `MailMessage` class. You then configure the message by adding a body and a subject. The next step is to provide information about the sender and receivers of the message, and finally you need to create an instance of the `SmtpClient` class to send the message. The following exercise shows you how to code these four steps.

TRY IT OUT Sending E-mail Messages

In this exercise, you create a simple page in the `Demos` folder. The code in this page creates an e-mail message that is sent when the page loads. In a later exercise you modify the contact form so it can send the user's response by e-mail.

1. Under the `Demos` folder create a new file called `Email.aspx`. Make sure it's based on your own base page template so that it has the right master page and inherits from `BasePage` automatically. Change the page's `Title` to **`E-mail Demo`**.

2. Switch to the Code Behind by pressing F7 and at the top of the file, before the class definition, add the following statement to make the classes in the `System.Net.Mail` namespace available to your code:

   VB.NET

   ```
   Imports System.Net.Mail
   ```

   C#

   ```
   using System.Net.Mail;
   ```

3. Add the following code to a `Page_Load` handler. If you're using VB.NET you need to set up the handler first using the two drop-down lists at the top of the Document Window (or by double-clicking the page in Design View):

   VB.NET

   ```
   Protected Sub Page_Load(ByVal sender As Object, ByVal e As System.EventArgs) _
             Handles Me.Load
     Dim myMessage As MailMessage = New MailMessage()
     myMessage.Subject = "Test Message"
     myMessage.Body = "Hello world, from Planet Wrox"
     myMessage.From = New MailAddress("you@yourprovider.com", "Sender Name")
     myMessage.To.Add(New MailAddress("you@yourprovider.com", "Receiver Name"))

     Dim mySmtpClient As SmtpClient = New SmtpClient()
     mySmtpClient.Send(myMessage)
   End Sub
   ```

   C#

   ```
   protected void Page_Load(object sender, EventArgs e)
   {
     MailMessage myMessage = new MailMessage();
     myMessage.Subject = "Test Message";
   ```

```
    myMessage.Body = "Hello world, from Planet Wrox";
    myMessage.From = new MailAddress("you@yourprovider.com", "Sender Name");
    myMessage.To.Add(new MailAddress("you@yourprovider.com", "Receiver Name"));

    SmtpClient mySmtpClient = new SmtpClient();
    mySmtpClient.Send(myMessage);
  }
```

Change the e-mail addresses and names in the two lines that set the `From` and `To` addresses to your own. If you have only one e-mail address, you can use the same address for the sender and the receiver.

4. Open `web.config` and right before the closing `</configuration>` tag, add the following settings:

```
  <system.net>
    <mailSettings>
      <smtp deliveryMethod="Network"
               from="Your Name &lt;you@yourprovider.com&gt;">
        <network host="smtp.yourprovider.com" />
      </smtp>
    </mailSettings>
  </system.net>
</configuration>
```

Don't forget to change `smtp.yourprovider.com` to the name of your SMTP server. Also, be sure to enter your name and e-mail address in the `from` attribute. If necessary, add the `userName`, `password`, and `port` attributes to the `<network>` element as shown earlier. If you're using Gmail or another server that requires SSL for sending your e-mail, your `<network />` element should look like this:

```
  <network enableSsl="true" userName="YourAccountName@gmail.com"
                   password="YourPassword" host="smtp.gmail.com" />
```

Check with your host for specific requirements concerning the port number when SSL is used; typical port numbers include 465 and 587.

5. Save all changes, switch back to `Email.aspx`, and request it in your browser. After a while, you should receive an e-mail message at the address you specified in step 3 of this exercise or in your local pickup folder.

COMMON MISTAKES *If you get an error, there are a couple of things you can check. First, make sure you entered the right SMTP server in* `web.config`*. You may need to talk to your Internet provider or network administrator to get the right address and optionally a user name and password. Also make sure that the mail server you are using actually allows you to send messages. If you get an error such as "The SMTP server requires a secure connection or the client was not authenticated," your provider may require you to log in or to use SSL to secure the connection. If that's the case, check the user name, password and port number in* `web.config` *or try setting the* `enableSsl` *attribute of the* `<network />` *element as shown earlier.*

Finally, if you get the error "The specified string is not in the form required for an e-mail address," check if you entered a valid e-mail address in the `from` *attribute in the* `web.config` *file. You get this error if you leave out the* `@` *symbol or make some other syntax error.*

If you can't make sending mails from your local machine work, you can always use the `SpecifiedPickupDirectory` *delivery option to store the files on your local machine.*

How It Works

You added the following `Imports` or `using` statement to the Code Behind file:

VB.NET

```
Imports System.Net.Mail
```

C#

```
using System.Net.Mail;
```

This statement is used to make the classes in this namespace available in your code without prefixing them with their full namespace. This enables you, for example, to create a `MailMessage` instance like this:

VB.NET

```
Dim myMessage As MailMessage = New MailMessage()
```

C#

```
MailMessage myMessage = new MailMessage();
```

Without the `Imports` or `using` statement, you would need this longer code instead:

VB.NET

```
Dim myMessage As System.Net.Mail.MailMessage = New System.Net.Mail.MailMessage()
```

C#

```
System.Net.Mail.MailMessage myMessage = new System.Net.Mail.MailMessage();
```

After the `Imports` / `using` statement, the code creates a new `MailMessage` object and sets its `Subject` and `Body` properties. The code then assigns addresses for the sender and recipient of the e-mail message:

VB.NET

```
myMessage.From = New MailAddress("you@yourprovider.com", "Sender Name")
myMessage.To.Add(New MailAddress("you@yourprovider.com", "Receiver Name"))
```

C#

```
myMessage.From = new MailAddress("you@yourprovider.com", "Sender Name");
myMessage.To.Add(new MailAddress("you@yourprovider.com", "Receiver Name"));
```

The `From` property of the `MailMessage` is of type `MailAddress`, so you can assign a new `MailAddress` directly. The constructor of the `MailAddress` class accepts the e-mail address and friendly name as strings so you can create and assign the `From` address with a single line of code.

The `To` property of the `MailMessage` class is a collection, so you cannot assign a `MailAddress` directly. Instead, you need to use the `Add` method to assign an address. This also enables you to add multiple recipients by calling `To.Add` multiple times, each time passing in a different `MailAddress` instance. You use the `CC` and `Bcc` properties in a similar way to assign e-mail addresses to the carbon copy and blind carbon copy fields of an e-mail message.

The final two lines of the code send out the actual message:

VB.NET

```
Dim mySmtpClient As SmtpClient = New SmtpClient()
mySmtpClient.Send(myMessage)
```

C#

```
SmtpClient mySmtpClient = new SmtpClient();
mySmtpClient.Send(myMessage);
```

When the `Send` method is called, the `SmtpClient` scans the `web.config` file for a configured SMTP server or local drop folder. It then contacts that server and delivers the message or saves it locally.

In the preceding Try It Out exercise, the body text for the e-mail message is hardcoded. This isn't always the best solution because it means you need to scan and change your code whenever you want to change the text. It's often better to use a text-based template instead. You see how to do this in the next section.

Reading from Text Files

The .NET Framework comes with a few handy classes and methods that make working with files very easy. For example, the `File` class located in the `System.IO` namespace enables you to read from and write to files, create and delete files, and move files around. This class contains only static methods, which means you don't have to create an instance of the class first. Instead, you directly call methods on the `File` class. For example, to read the complete contents of a text file, you can use the following code:

VB.NET

```
 Dim myContents As String = System.IO.File.ReadAllText("C:\MyFile.txt")
```

C#

```
 string myContents = System.IO.File.ReadAllText(@"C:\MyFile.txt");
```

In this example, the file name in C# is prefixed with an @ symbol, to avoid the need to prefix each backslash (\) with an additional backslash. In C#, the backslash has a special meaning (it's used to "escape" other characters that have a special meaning), so to use it in a string you normally need to prefix it with another backslash. Using the @ symbol tells the compiler that it should treat each backslash it finds as literal, ignoring the special meaning of the character. It also preserves any line breaks inside the string.

The following table lists the most common methods of the `File` class that enable you to work with files.

METHOD	VALUE
`AppendAllText`	Appends a specified string to a text file. If the file does not exist, it's created first.
`Copy`	Copies a file from one location to another.
`Delete`	Deletes the specified file from disk.
`Exists`	Checks if the specified file exists on disk.
`Move`	Moves the specified file to a different location.
`ReadAllText`	Reads the contents of a text file.
`WriteAllText`	Writes the contents of a string to a new file and overwrites the target file if it already exists.

You can use these methods for all kinds of purposes. For example, when a user has uploaded a file, you can use the `Move` method to move it to a different folder. Additionally, when you want to get rid of uploaded files that you don't need anymore, you use the `Delete` method.

The `ReadAllText` method is useful to read the complete contents of a text file. For example, when sending text by e-mail, you could store the body text of the e-mail in a text file. When you're about to send the e-mail, you call `ReadAllText` and assign the contents that this method returns to the body of the e-mail. You see how this works in the following Try It Out.

TRY IT OUT Sending Mail from the ContactForm User Control

This exercise shows you how to use e-mail to send the user data from the contact form to your own Inbox. As the body of the e-mail message, the code reads in a text file that contains placeholders. These placeholders are filled with the actual user data from the form and then sent by e-mail.

1. Start by adding a new text file to the `App_Data` folder in your web site. If you don't have the `App_Data` folder yet, right-click the web site and choose Add ASP.NET Folder ➪ App_Data. Create the text file by right-clicking the `App_Data` folder and choosing Add New Item. Then click Text File and name the file `ContactForm.txt`.

2. Enter the following text in the text file, including the placeholders wrapped in a pair of double hash symbols:

```
Hi there,

A user has left the following feedback at the site:

Name:              ##Name##
E-mail address:    ##Email##
Home phone:        ##HomePhone##
Business phone:    ##BusinessPhone##
Comments:          ##Comments##
```

Save and close the file.

3. Open the Code Behind of the `ContactForm.ascx` user control and import the following namespaces (without the comments) at the top of the file:

VB.NET

```
Imports System.IO        ' Provides access to the File class for reading the file
Imports System.Net.Mail  ' Provides access to the various mail related classes

Partial Class Controls_ContactForm
  Inherits System.Web.UI.UserControl
```

C#

```
using System.IO;         // Provides access to the File class for reading the file
using System.Net.Mail;   // Provides access to the various mail related classes

public partial class Controls_ContactForm : System.Web.UI.UserControl
```

4. Switch to Markup View and add `runat="server"` and `id="FormTable"` attributes to the table with the server controls. This way you can hide the entire table programmatically when the form has been submitted. To do this, locate the opening table tag and modify it like this:

```
<table class="style1" runat="server" id="FormTable">
```

5. Scroll down to the end of the file and right after the closing `</table>` tag, add a label called `Message`. Set its `Text` property to `Message Sent`. Hide the label by setting the `Visible` property to `False`:

```
</table>
<asp:Label ID="Message" runat="server" Text="Message Sent" Visible="False" />
```

6. Switch the control into Design View and set `ShowSummary` of the `ValidationSummary` back to `True` and `ShowMessageBox` to `False`. Next, double-click the Send button. Inside the event handler that VWD adds for you, add the following code:

VB.NET

```
Protected Sub SendButton_Click(ByVal sender As Object, ByVal e As System.EventArgs) _
            Handles SendButton.Click
  If Page.IsValid Then
```

```
    Dim fileName As String = Server.MapPath("~/App_Data/ContactForm.txt")
    Dim mailBody As String = File.ReadAllText(fileName)

    mailBody = mailBody.Replace("##Name##", Name.Text)
    mailBody = mailBody.Replace("##Email##", EmailAddress.Text)
    mailBody = mailBody.Replace("##HomePhone##", PhoneHome.Text)
    mailBody = mailBody.Replace("##BusinessPhone##", PhoneBusiness.Text)
    mailBody = mailBody.Replace("##Comments##", Comments.Text)

    Dim myMessage As MailMessage = New MailMessage()
    myMessage.Subject = "Response from web site"
    myMessage.Body = mailBody

    myMessage.From = New MailAddress("you@yourprovider.com", "Sender Name")
    myMessage.To.Add(New MailAddress("you@yourprovider.com", "Receiver Name"))

    Dim mySmtpClient As SmtpClient = New SmtpClient()
    mySmtpClient.Send(myMessage)

    Message.Visible = True
    FormTable.Visible = False
  End If
End Sub
```

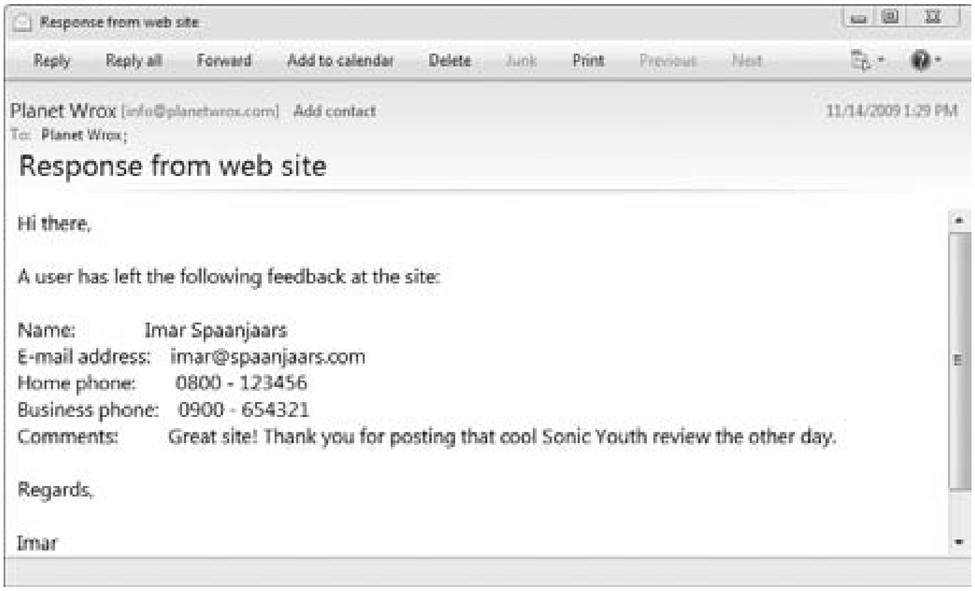
C#

```
protected void SendButton_Click(object sender, EventArgs e)
{
  if (Page.IsValid)
  {
    string fileName = Server.MapPath("~/App_Data/ContactForm.txt");
    string mailBody = File.ReadAllText(fileName);

    mailBody = mailBody.Replace("##Name##", Name.Text);
    mailBody = mailBody.Replace("##Email##", EmailAddress.Text);
    mailBody = mailBody.Replace("##HomePhone##", PhoneHome.Text);
    mailBody = mailBody.Replace("##BusinessPhone##", PhoneBusiness.Text);
    mailBody = mailBody.Replace("##Comments##", Comments.Text);

    MailMessage myMessage = new MailMessage();
    myMessage.Subject = "Response from web site";
    myMessage.Body = mailBody;

    myMessage.From = new MailAddress("you@yourprovider.com", "Sender Name");
    myMessage.To.Add(new MailAddress("you@yourprovider.com", "Receiver Name"));

    SmtpClient mySmtpClient = new SmtpClient();
    mySmtpClient.Send(myMessage);

    Message.Visible = true;
    FormTable.Visible = false;
  }
}
```

Again, make sure you replace the e-mail addresses for the `From` and `To` properties of the `MailMessage` with your own.

7. Save all your changes and once again request the page `Contact.aspx` in the browser. Enter your details and click the Send button. You'll see the text Message Sent appear.

8. Check the e-mail account you sent the e-mail to and after a while, you should receive an e-mail message, similar to Figure 9-11.



Planet Wrox [info@planetwrox.com] Add contact 11/14/2009 1:29 PM
To: Planet Wrox;

Response from web site

Hi there,

A user has left the following feedback at the site:

Name: Imar Spaanjaars
E-mail address: imar@spaanjaars.com
Home phone: 0800 - 123456
Business phone: 0900 - 654321
Comments: Great site! Thank you for posting that cool Sonic Youth review the other day.

Regards,

Imar

FIGURE 9-11

How It Works

The mail-sending part of this exercise is pretty similar to the demo page you created earlier. What's different, however, is where the body text for the mail message comes from. Instead of hardcoding the body in the Code Behind of the `ContactForm` control, you moved the text to a separate file. This file in turn contains a few placeholders that are replaced at runtime with the user's details. To read in the entire file at once, you use the following code:

VB.NET

```
Dim fileName As String = Server.MapPath("~/App_Data/ContactForm.txt")
Dim mailBody As String = File.ReadAllText(fileName)
```

C#

```
string fileName = Server.MapPath("~/App_Data/ContactForm.txt");
string mailBody = File.ReadAllText(fileName);
```

The first line uses Server.MapPath to translate a *virtual path* into its *physical* counterpart. By using the virtual path, it's easier to move your site to a different location because it doesn't depend on any hardcoded paths. Server.MapPath("~/App_Data/ContactForm.txt") returns a physical path such as C:\BegASPNET\Site\App_Data\ContactForm.txt. This path is then fed to the ReadAllText method of the File class, which opens the file and returns its contents, which are then assigned to the mailBody variable.

> ***NOTE*** *Reading this file every time you need it isn't very efficient. In Chapter 15 you see how to cache the contents of this file so you don't have to read it on every request.*

The code then uses a number of calls to the Replace method of the String class to replace the static placeholders in the message body with the details the user entered in the contact form. The return value of the Replace method — the new text with the replaced strings — is reassigned to the mailBody variable. After the final call to Replace, the mailBody no longer contains the placeholders, but the user's details instead:

VB.NET

```
mailBody = mailBody.Replace("##Name##", Name.Text)
...
mailBody = mailBody.Replace("##Comments##", Comments.Text)
```

C#

```
mailBody = mailBody.Replace("##Name##", Name.Text);
...
mailBody = mailBody.Replace("##Comments##", Comments.Text);
```

The Replace method is case sensitive, so if you find that some placeholders are not replaced correctly, make sure you used the same capitalization in the code and in the message body.

The placeholders are wrapped in a pair of double hash symbols (##). The hash symbols are arbitrarily chosen, but help to identify the placeholders, minimizing the risk that you accidentally replace some text that is supposed to be in the actual message.

In addition to the Replace method, you could also use String.Format to format the message. The Format method accepts a string containing numeric placeholders wrapped in curly braces and a number of values (that correspond to the numbers used in the placeholders) to replace the placeholders with. You see more of this method in the next chapter.

Once the message body is set up, it's assigned to the MailMessage object, which is then sent using the SmtpClient, identical to what you saw in an earlier exercise.

When you filled in your details in the contact form and clicked the Send button, you may have noticed some page flicker, as the page submits to the server and is then reloaded with the success message. This page flicker can easily be minimized or completely removed using Ajax technologies, which are discussed in the next chapter.

PRACTICAL TIPS ON VALIDATING DATA

The following list provides practical tips on validating data:

- Always validate all user input. Whenever you have a public web site on the Internet, you lose the ability to control its users. To stop malicious users from entering bogus data in your system, always validate your users' input using the ASP.NET validation controls.
- Always provide useful error messages in your validation controls. Either assign the error message to the `ErrorMessage` property and leave the `Text` empty, or use a `ValidationSummary` control to show a list of error messages.
- Consider using the `CssClass` attribute of the validation controls to move the style definitions for the error messages to a separate CSS file instead of setting them directly on the validation controls.
- Whenever you are writing code that sends an e-mail message, consider moving the body of the e-mail to a separate text file stored in the `App_Data` folder because it makes your application much easier to maintain.
- When storing data in text or XML files, always store them in the `App_Data` folder that is designed specifically for this purpose. This way, all your data files are nicely packed together. More importantly, by default the web server blocks access to the files in this folder so a visitor to your site cannot directly request them.
- When sending e-mails as a test, always send them to an existing and valid address. Even though an address like `asdf@test.com` may appear to be invalid, there's a fair chance the account exists and is monitored, leading to the possible loss of sensitive data like passwords you may be sending through e-mail.
- Consider using `SpecifiedPickupDirectory` as the `deliveryMethod` for SMTP mail during development. It avoids the need to send messages over the network, resulting in a faster response and a cleaner Inbox.

SUMMARY

User input is an important aspect of most interactive web sites. The input comes from different sources in your web site: the contact form you created in this chapter, the query string, and other sources. To stop users from entering invalid or even dangerous content into your system, it's important to validate all input before you work with it.

The biggest benefit of the validation controls that ship with ASP.NET 4 is that they work at the client and at the server, enabling you to create responsive forms where users get immediate feedback about any errors they make, without the need for a full postback. At the same time, the data is validated at the server, ensuring that data coming from clients that don't use JavaScript is valid as well.

To store the information that users submit to your site, you have a couple of options. The data can be stored in a database or a text file or sent by e-mail. The latter option is particularly useful for contact forms, so you get an immediate alert when someone leaves a comment at your web site. Sending e-mail is a breeze with the classes in the `System.Net.Mail` namespace. These classes enable you to create an e-mail message, add subject, body, sender, and recipient information, and then send the message using the `SmtpClient` class.

EXERCISES

1. To make the `ContactForm.ascx` user control even more reusable, you can create a string property such as `PageDescription` on it that enables you to set the name of the page that uses the control. You then add this string to the declaration of the control in the containing page. Finally, you can add the description to the subject of the message that you send. This way, you can see from which page the contact form was called. What code do you need to write to make this happen?

2. Why is it so important that you check the value of the `IsValid` property of the `Page` when processing data? What can happen if you forget to make this check?

3. What's the difference in behavior between the `To` and the `From` property of the `MailMessage` class?

4. When you use a `CustomValidator`, you can write validation code at the client and at the server. How do you tell the ASP.NET runtime what client-side validation method to call during the validation process?

5. How do you tell the validation mechanism that validation succeeded or failed in your `CustomValidator` routines?

Answers to Exercises can be found in Appendix A.

▶ WHAT YOU LEARNED IN THIS CHAPTER

Client-side validation	Validation that takes place in the client's browser. Mainly serves as a courtesy to users and offers quick feedback
`File` class	Contains methods that enable you to work with files, including reading and writing text files
`Format` method	A method on the `String` class to replace numeric placeholders in a string with other values
Regular expressions	A compact and flexible syntax for finding strings of text in other strings
`Replace` method	A method on the `String` class to replace one value in a string with another
Server-side validation	Validation that takes place at the server. You always need server-side validation to protect your data as client-side validation can be bypassed
SMTP Server	A server responsible for accepting and delivering e-mail
SSL	A technique to encrypt (and thus protect) data flowing between two machines
`System.Net.Mail` namespace	The namespace for e-mail classes such as `MailMessage`, `MailAddress` and `SmtpClient`
Validation controls	A set of ASP.NET server controls that enable you to validate user input at the client and at the server