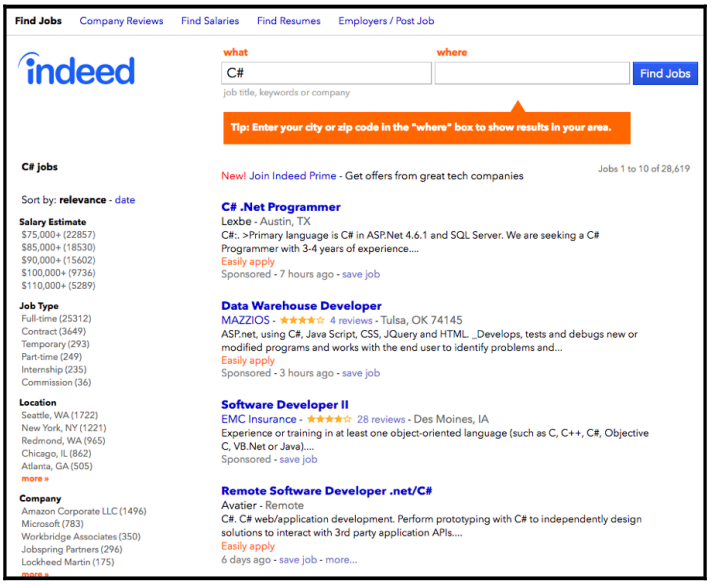
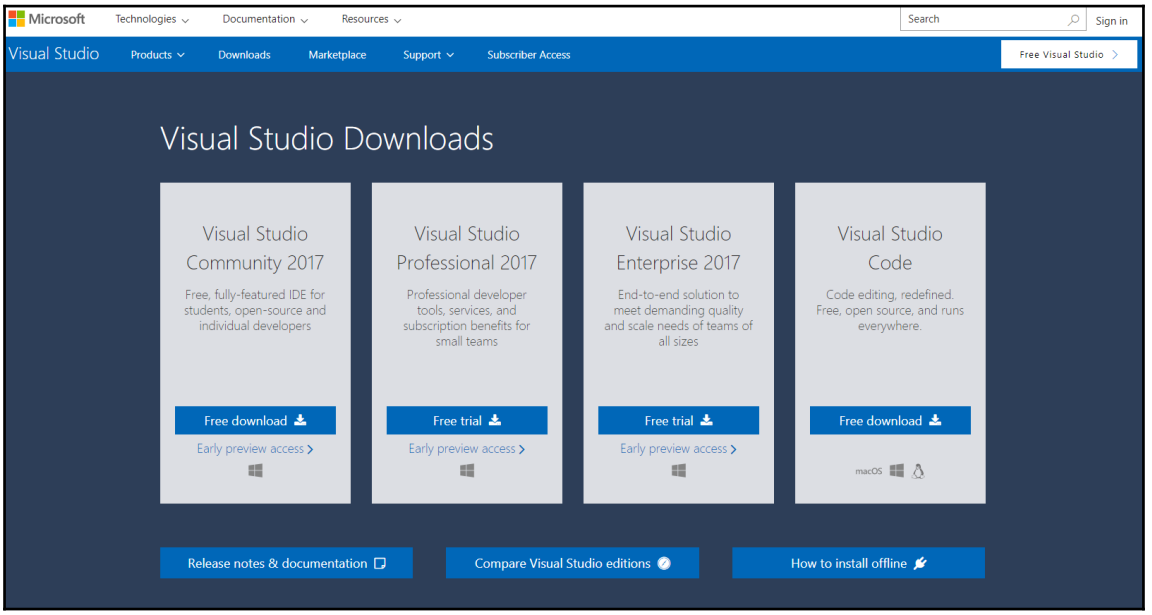
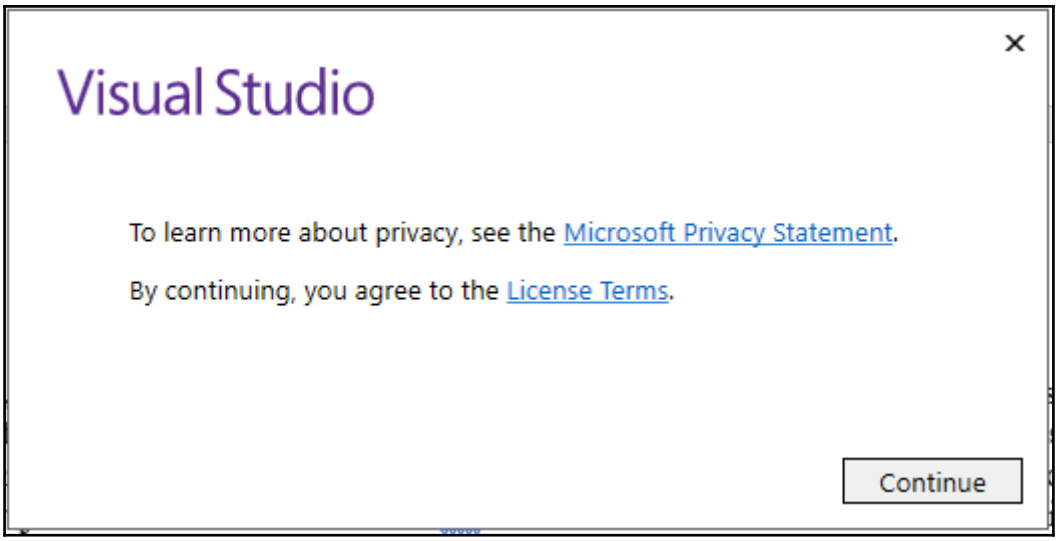
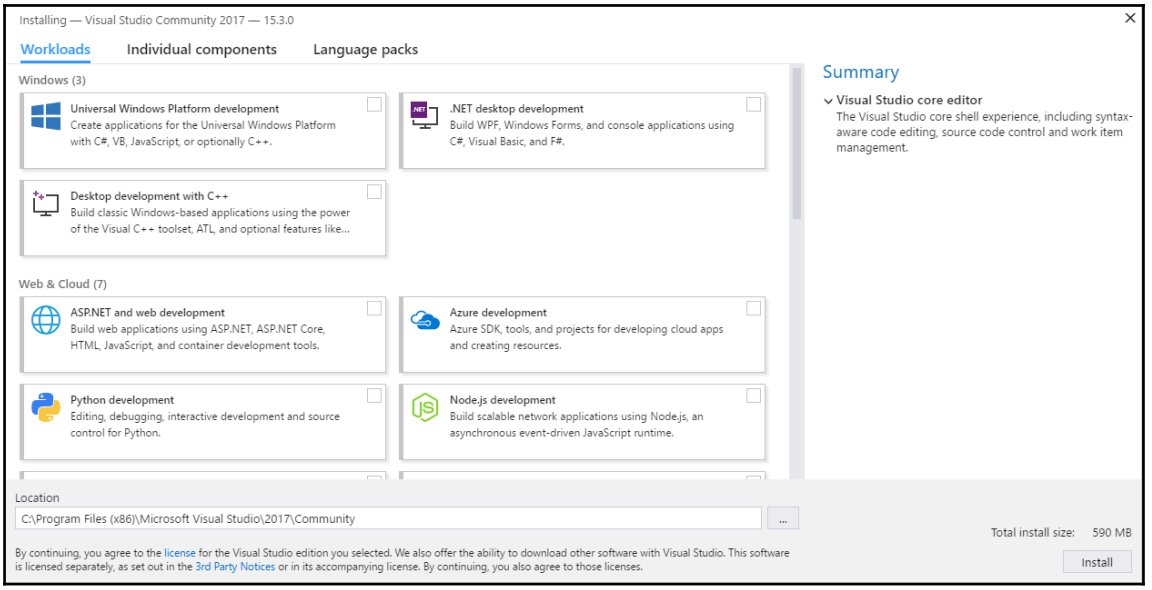
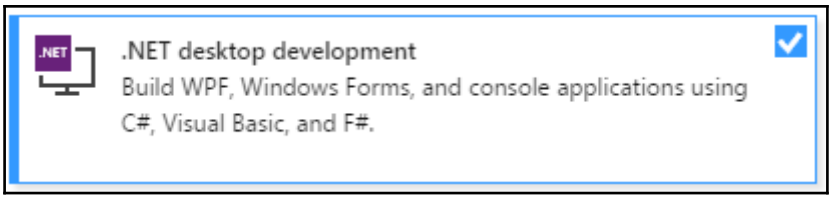
Chapter 1:Why C# and How to Download and Install the Visual Studio Community Edition

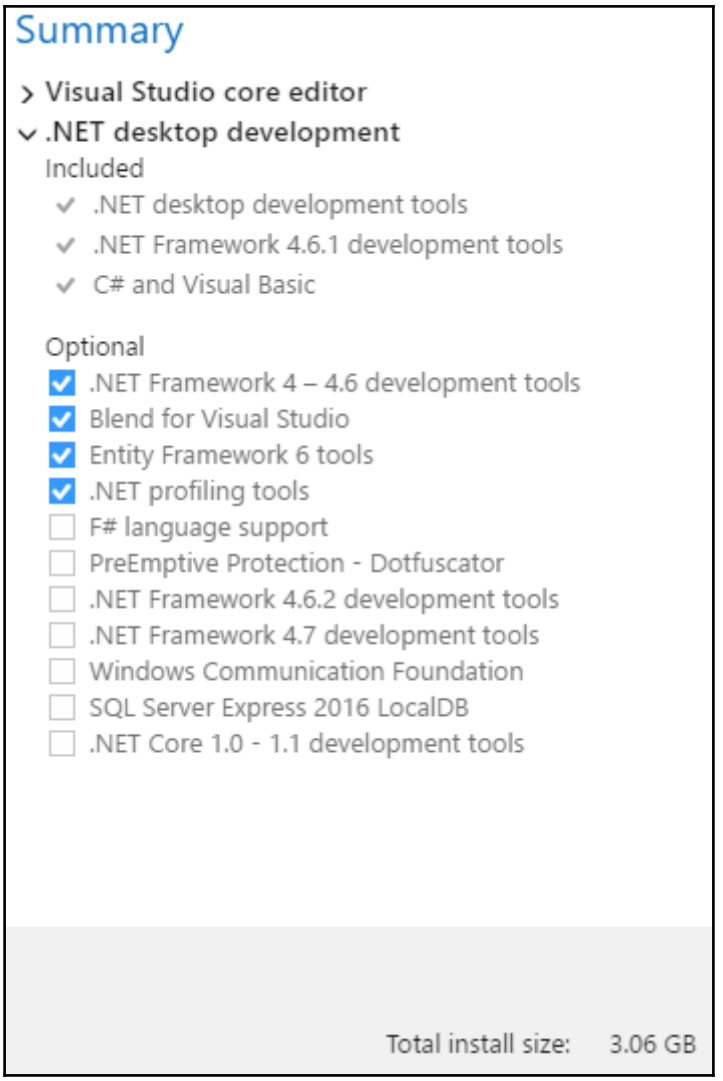


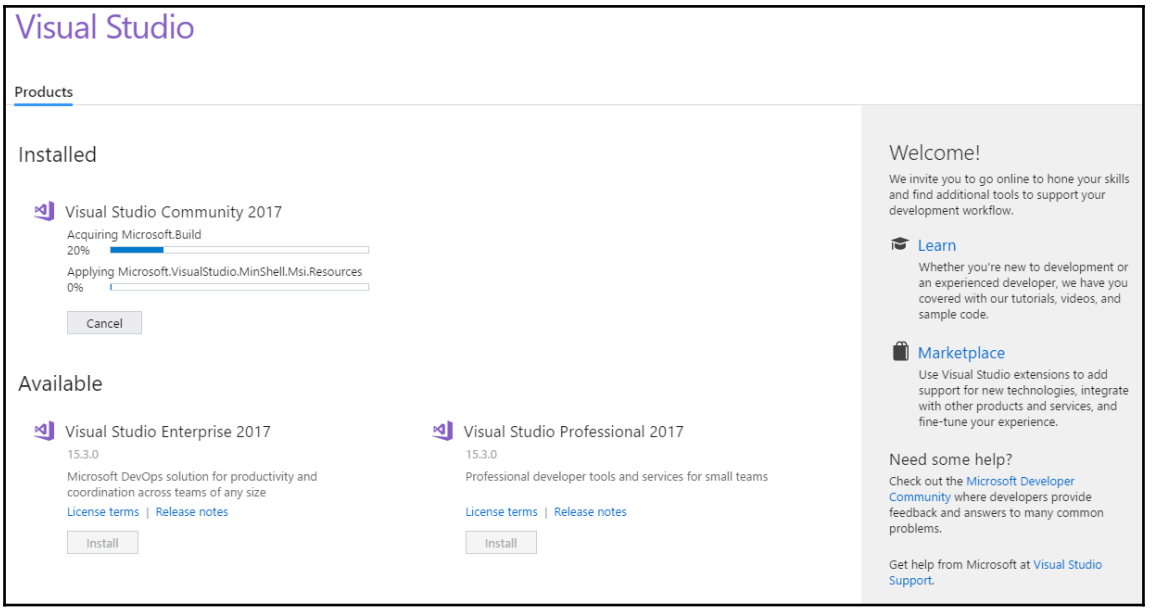


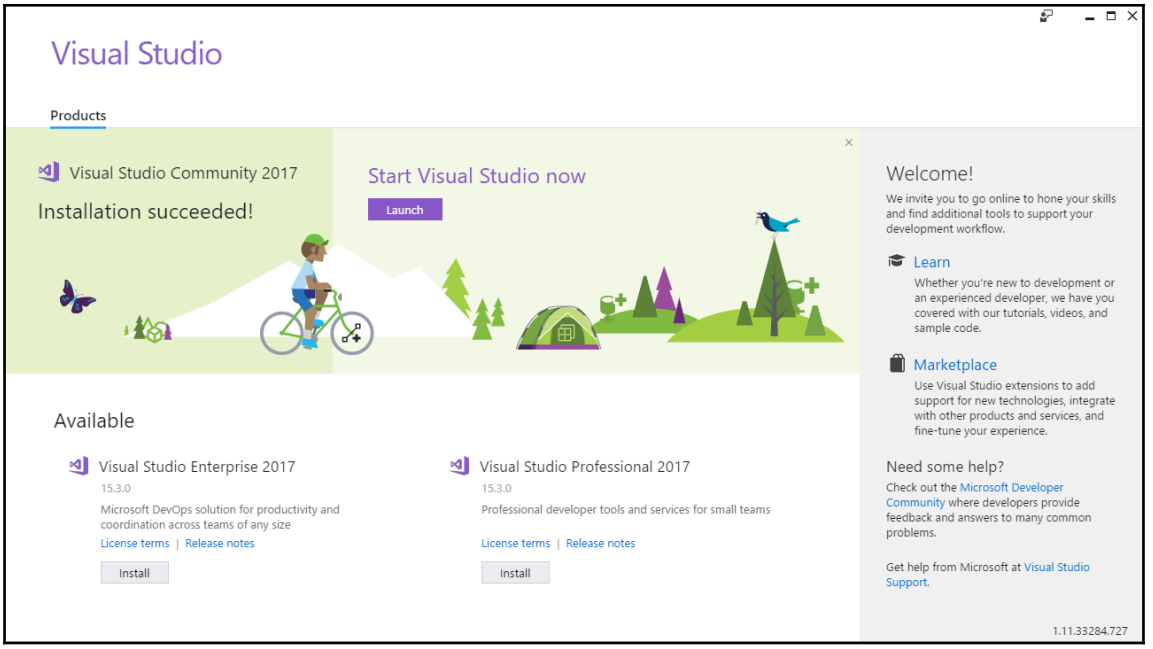

Visual Studio
To learn more about privacy, see the Microsoft Privacy Statement.
By continuing, you agree to the License Terms.
Continue


Installing — Visual Studio Community 2017 — 15.3.0
Workloads
Individual components
Language packs
Windows (3)
Universal Windows Platform development
Create applications for the Universal Windows Platform with C#, VB, JavaScript, or optionally C++.
.NET desktop development
Build WPF, Windows Forms, and console applications using C#, Visual Basic, and F#.
Desktop development with C++
Build classic Windows-based applications using the power of the Visual C++ toolset, ATL, and optional features like...
Web & Cloud (7)
ASP.NET and web development
Build web applications using ASP.NET, ASP.NET Core, HTML, JavaScript, and container development tools.
Azure development
Azure SDK, tools, and projects for developing cloud apps and creating resources.
Python development
Editing, debugging, interactive development and source control for Python.
Node.js development
Build scalable network applications using Node.js, an asynchronous event-driven JavaScript runtime.
Summary
Visual Studio core editor
The Visual Studio core shell experience, including syntax-aware code editing, source code control and work item management.
Location
C:\Program Files (x86)\Microsoft Visual Studio\2017\Community
Total install size: 590 MB
Install


.NET desktop development
Build WPF, Windows Forms, and console applications using C#, Visual Basic, and F#.


Summary
Visual Studio core editor
.NET desktop development
Included
.NET desktop development tools
.NET Framework 4.6.1 development tools
C# and Visual Basic
Optional
.NET Framework 4 – 4.6 development tools
Blend for Visual Studio
Entity Framework 6 tools
.NET profiling tools
F# language support
PreEmptive Protection - Dotfuscator
.NET Framework 4.6.2 development tools
.NET Framework 4.7 development tools
Windows Communication Foundation
SQL Server Express 2016 LocalDB
.NET Core 1.0 - 1.1 development tools
Total install size: 3.06 GB


Visual Studio
Products
Installed
Visual Studio Community 2017
Acquiring Microsoft.Build
20%
Applying Microsoft.VisualStudio.MinShell.Msi.Resources
0%
Cancel
Available
Visual Studio Enterprise 2017
15.3.0
Microsoft DevOps solution for productivity and coordination across teams of any size
License terms | Release notes
Install
Visual Studio Professional 2017
15.3.0
Professional developer tools and services for small teams
License terms | Release notes
Install
Welcome!
We invite you to go online to hone your skills and find additional tools to support your development workflow.
Learn
Whether you're new to development or an experienced developer, we have you covered with our tutorials, videos, and sample code.
Marketplace
Use Visual Studio extensions to add support for new technologies, integrate with other products and services, and fine-tune your experience.
Need some help?
Check out the Microsoft Developer Community where developers provide feedback and answers to many common problems.
Get help from Microsoft at Visual Studio Support.


Visual Studio
Products
Visual Studio Community 2017
Installation succeeded!
Start Visual Studio now
Launch
Available
Visual Studio Enterprise 2017
15.3.0
Microsoft DevOps solution for productivity and coordination across teams of any size
License terms | Release notes
Install
Visual Studio Professional 2017
15.3.0
Professional developer tools and services for small teams
License terms | Release notes
Install
Welcome!
We invite you to go online to hone your skills and find additional tools to support your development workflow.
Learn
Whether you're new to development or an experienced developer, we have you covered with our tutorials, videos, and sample code.
Marketplace
Use Visual Studio extensions to add support for new technologies, integrate with other products and services, and fine-tune your experience.
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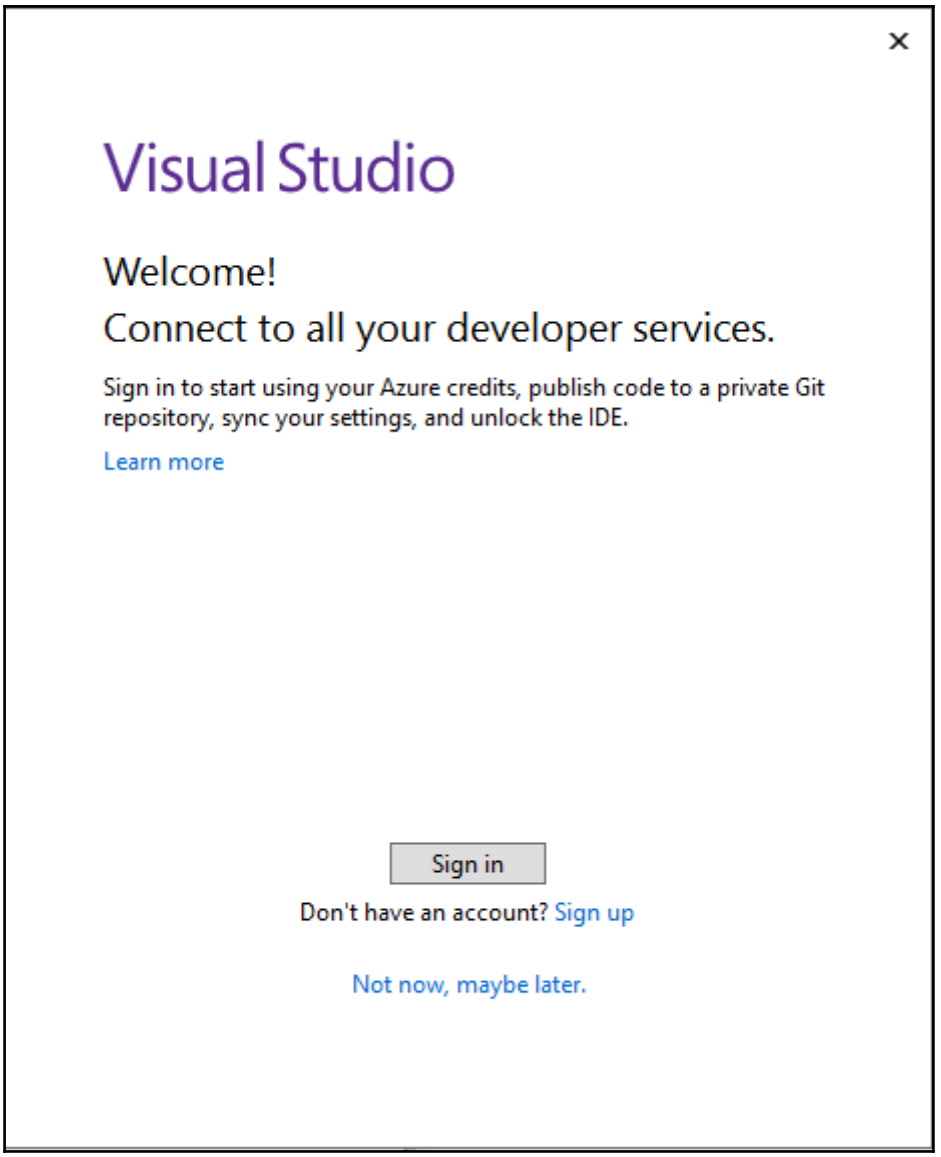
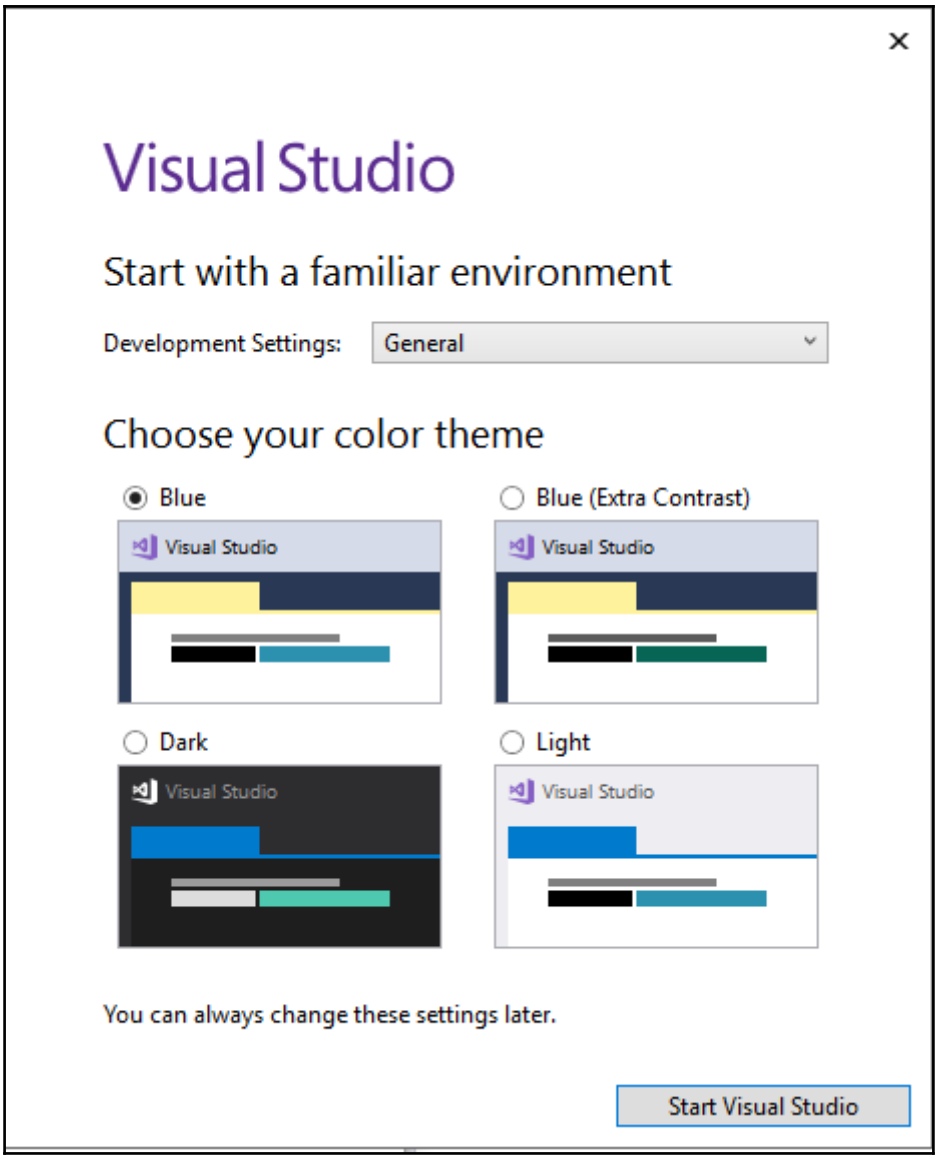
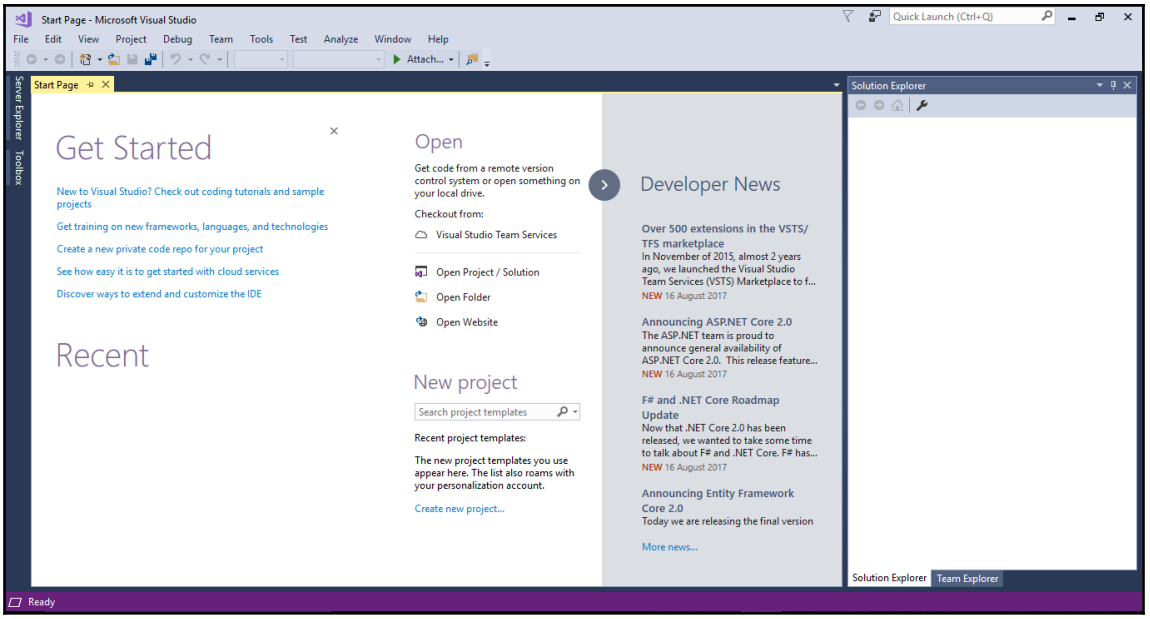
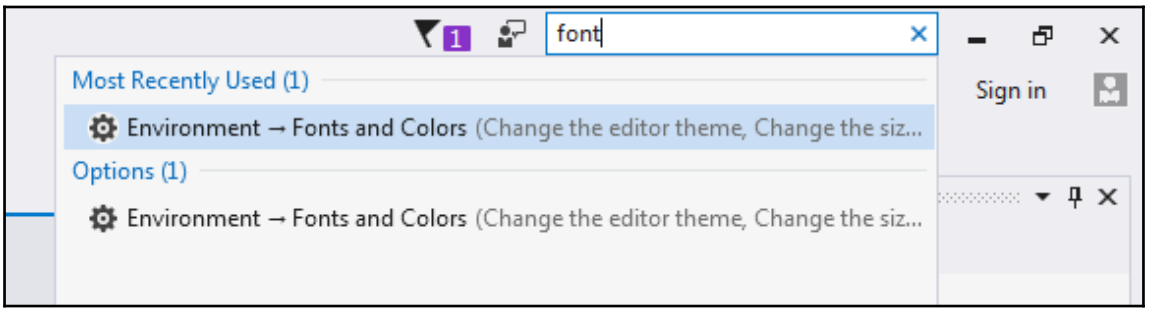
1.11.33284.727

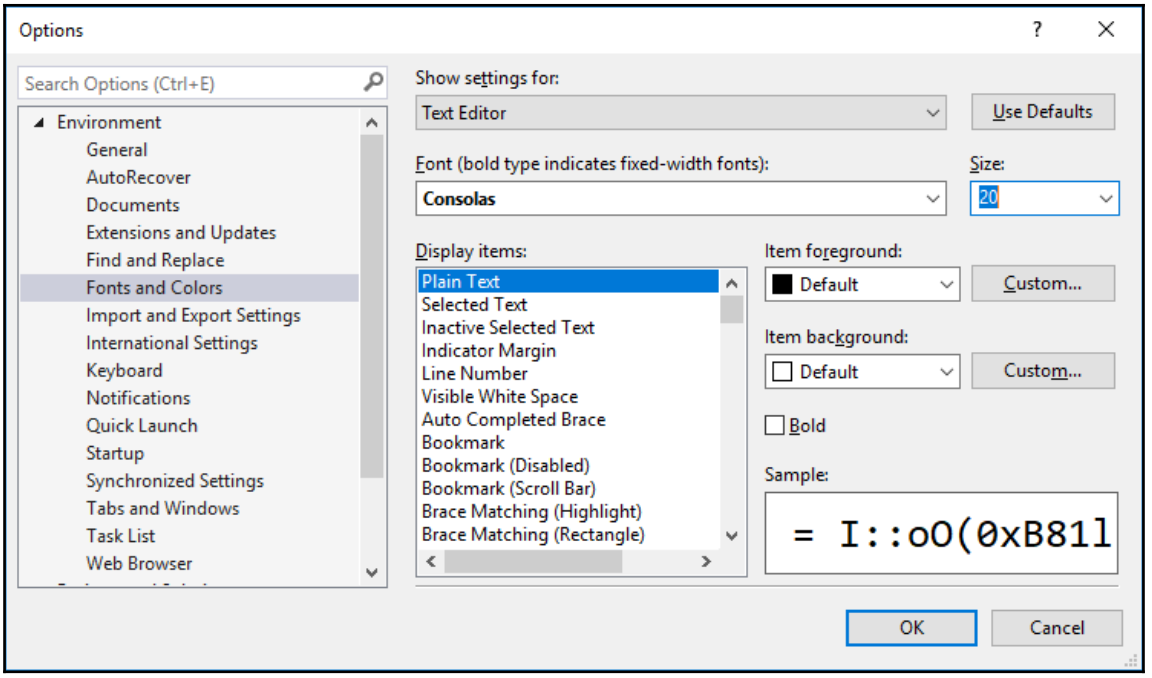

Visual Studio
Welcome!
Connect to all your developer services.
Sign in to start using your Azure credits, publish code to a private Git repository, sync your settings, and unlock the IDE.
Learn more
Sign in
Don't have an account? Sign up
Not now, maybe later.

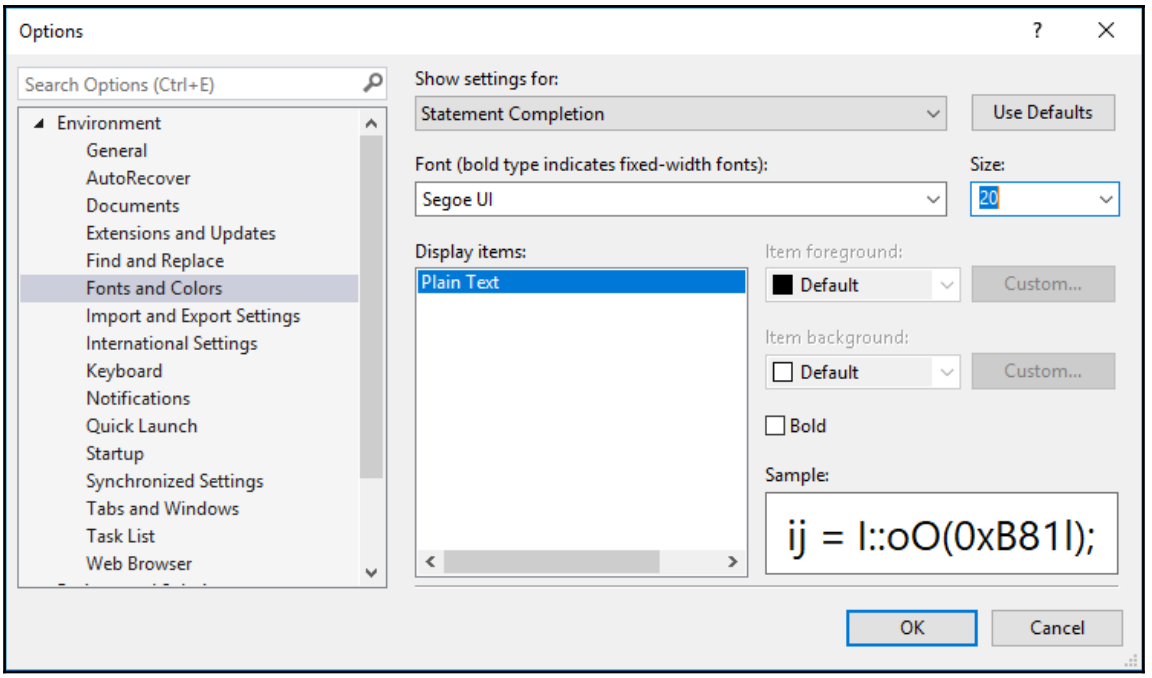

Visual Studio
Start with a familiar environment
Development Settings:
General
Choose your color theme
Blue
Blue (Extra Contrast)
Visual Studio
Visual Studio
Dark
Light
Visual Studio
Visual Studio
You can always change these settings later.
Start Visual Studio

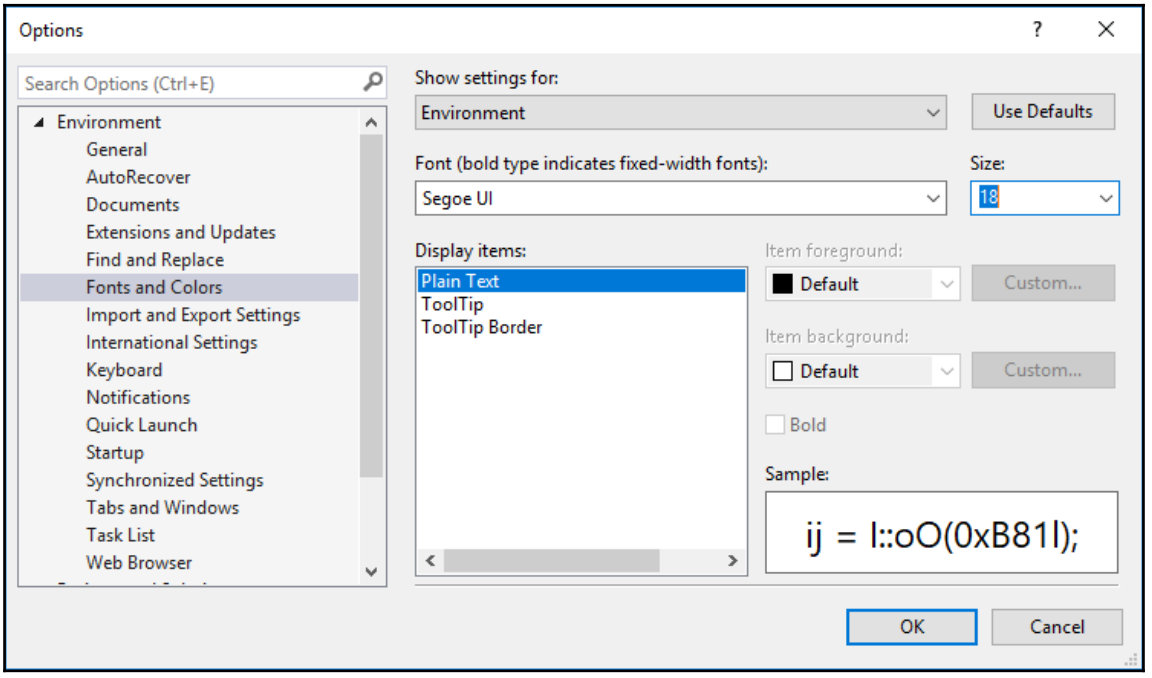

Start Page - Microsoft Visual Studio
File Edit View Project Debug Team Tools Test Analyze Window Help
Quick Launch (Ctrl+Q)
Attach...
Start Page
Server Explorer
Toolbox
Get Started
New to Visual Studio? Check out coding tutorials and sample projects
Get training on new frameworks, languages, and technologies
Create a new private code repo for your project
See how easy it is to get started with cloud services
Discover ways to extend and customize the IDE
Recent
Open
Get code from a remote version control system or open something on your local drive.
Checkout from:
Visual Studio Team Services
Open Project / Solution
Open Folder
Open Website
New project
Search project templates
Recent project templates:
The new project templates you use appear here. The list also roams with your personalization account.
Create new project...
Developer News
Over 500 extensions in the VSTS/ TFS marketplace
In November of 2015, almost 2 years ago, we launched the Visual Studio Team Services (VSTS) Marketplace to f...
NEW 16 August 2017
Announcing ASP.NET Core 2.0
The ASP.NET team is proud to announce general availability of ASP.NET Core 2.0. This release feature...
NEW 16 August 2017
F# and .NET Core Roadmap Update
Now that .NET Core 2.0 has been released, we wanted to take some time to talk about F# and .NET Core. F# has...
NEW 16 August 2017
Announcing Entity Framework Core 2.0
Today we are releasing the final version
More news...
Solution Explorer
Solution Explorer
Team Explorer
Ready

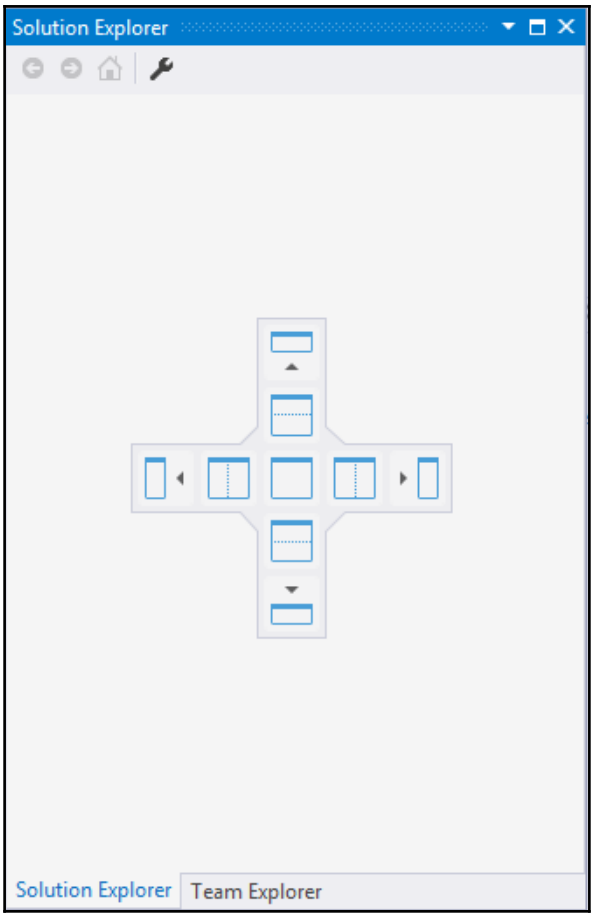
Chapter 2: Customizing Visual Studio to Make it Feel More Personal

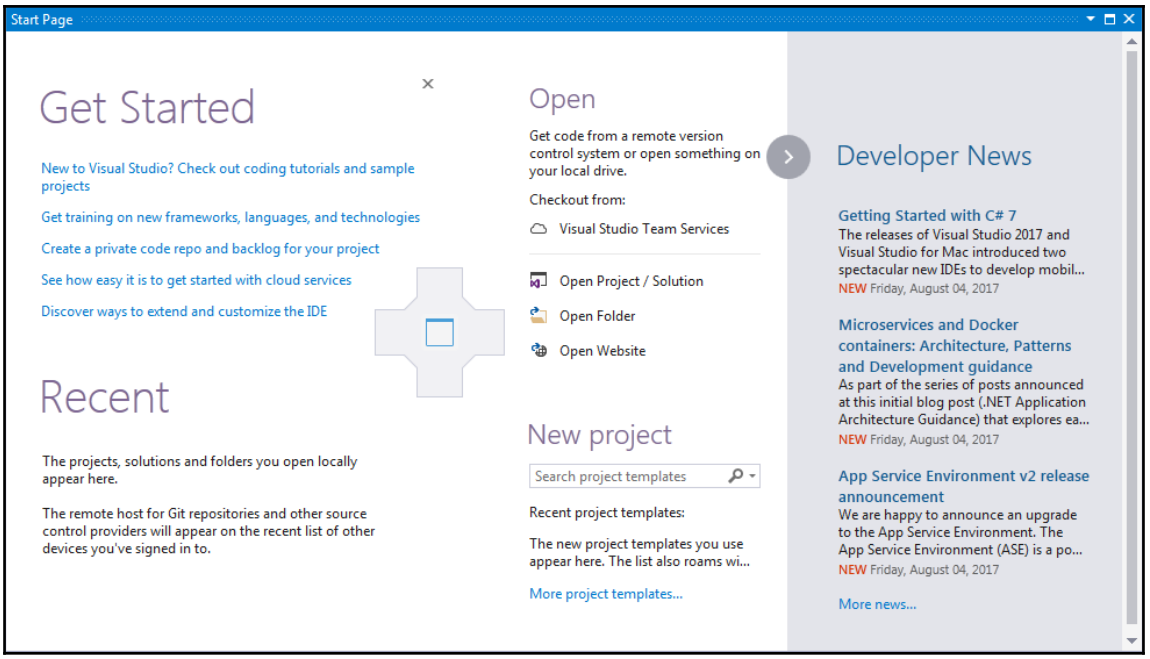


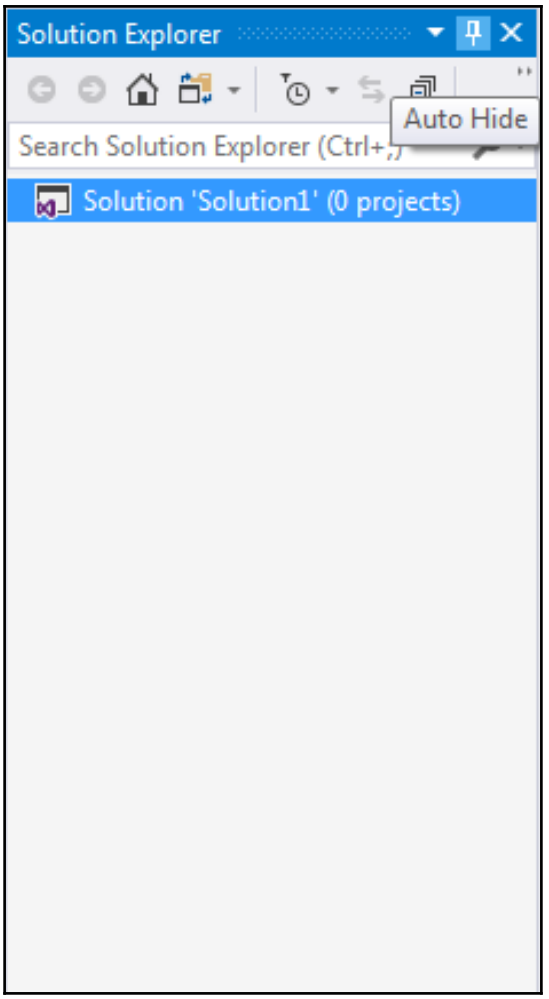



Options
Search Options (Ctrl+E)
Environment
General
AutoRecover
Documents
Extensions and Updates
Find and Replace
Fonts and Colors
Import and Export Settings
International Settings
Keyboard
Notifications
Quick Launch
Startup
Synchronized Settings
Tabs and Windows
Task List
Web Browser
Show settings for:
Statement Completion
Use Defaults
Font (bold type indicates fixed-width fonts):
Segoe UI
Size:
20
Display items:
Plain Text
Item foreground:
Default
Custom...
Item background:
Default
Custom...
Bold
Sample:
ij = l::oO(0xB81l);
OK
Cancel

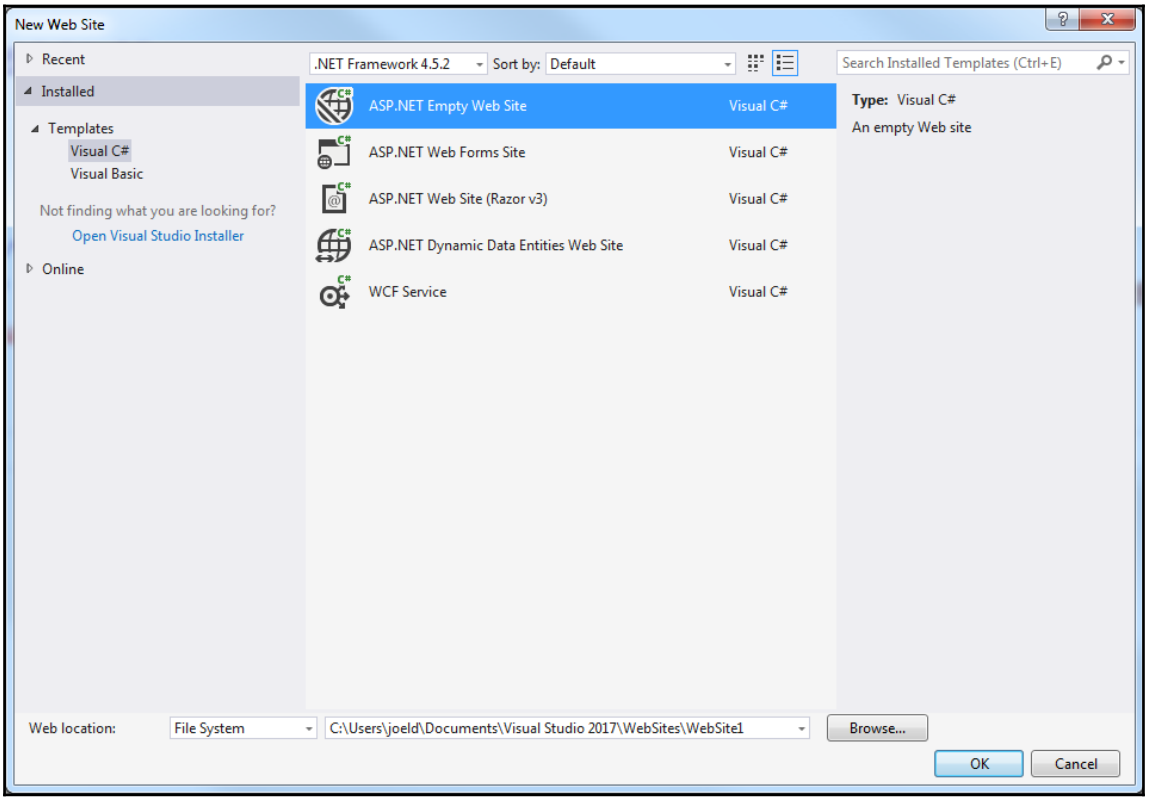

Options
Search Options (Ctrl+E)
Environment
General
AutoRecover
Documents
Extensions and Updates
Find and Replace
Fonts and Colors
Import and Export Settings
International Settings
Keyboard
Notifications
Quick Launch
Startup
Synchronized Settings
Tabs and Windows
Task List
Web Browser
Show settings for:
Environment
Use Defaults
Font (bold type indicates fixed-width fonts):
Segoe UI
Size:
18
Display items:
Plain Text
ToolTip
ToolTip Border
Item foreground:
Default
Custom...
Item background:
Default
Custom...
Bold
Sample:
ij = l::oO(0xB81l);
OK
Cancel

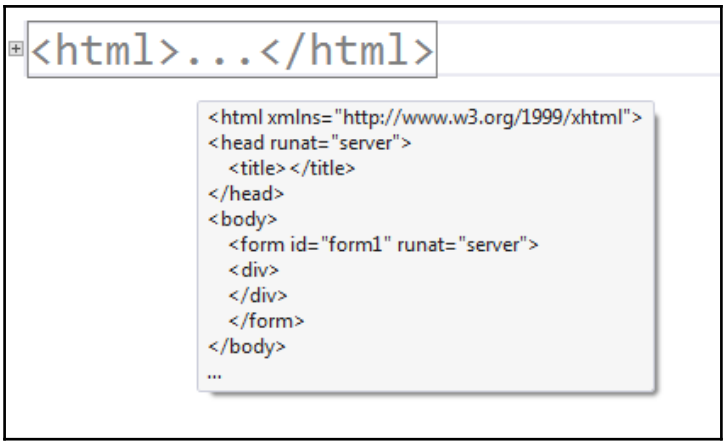

Solution Explorer
Solution Explorer
Team Explorer


Start Page
Get Started
New to Visual Studio? Check out coding tutorials and sample projects
Get training on new frameworks, languages, and technologies
Create a private code repo and backlog for your project
See how easy it is to get started with cloud services
Discover ways to extend and customize the IDE
Recent
The projects, solutions and folders you open locally appear here.
The remote host for Git repositories and other source control providers will appear on the recent list of other devices you've signed in to.
Open
Get code from a remote version control system or open something on your local drive.
Checkout from:
Visual Studio Team Services
Open Project / Solution
Open Folder
Open Website
New project
Search project templates
Recent project templates:
The new project templates you use appear here. The list also roams wi...
More project templates...
Developer News
Getting Started with C# 7
The releases of Visual Studio 2017 and Visual Studio for Mac introduced two spectacular new IDEs to develop mobil...
NEW Friday, August 04, 2017
Microservices and Docker containers: Architecture, Patterns and Development guidance
As part of the series of posts announced at this initial blog post (.NET Application Architecture Guidance) that explores ea...
NEW Friday, August 04, 2017
App Service Environment v2 release announcement
We are happy to announce an upgrade to the App Service Environment. The App Service Environment (ASE) is a po...
NEW Friday, August 04, 2017
More news...


Solution Explorer
Auto Hide
Search Solution Explorer (Ctrl+;)
Solution 'Solution1' (0 projects)

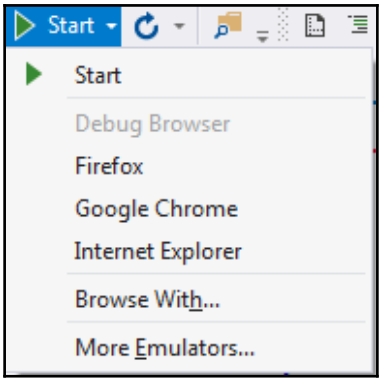
Chapter 3: Creating and Running Your First Page




<html>...</html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
<title></title>
</head>
<body>
<form id="form1" runat="server">

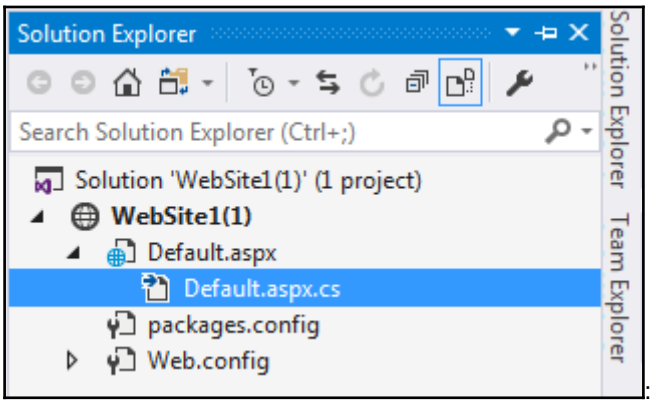
</form>
</body>
...

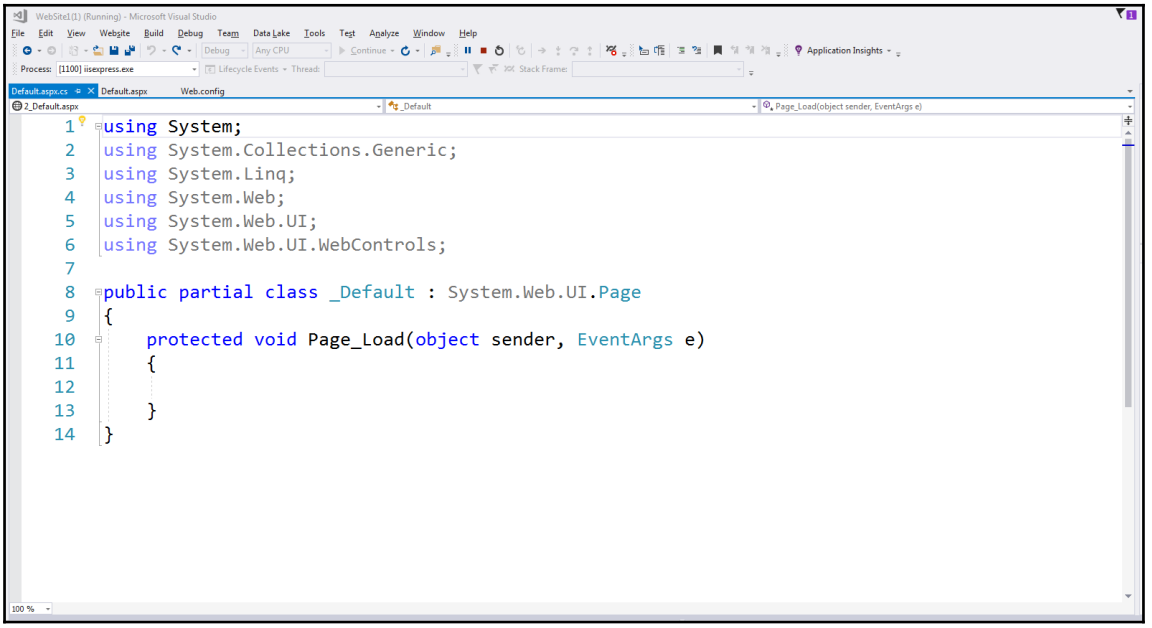

Our First page
localhost:57719/Default.aspx


Start
Start
Debug Browser
Firefox
Google Chrome
Internet Explorer
Browse With...
More Emulators...

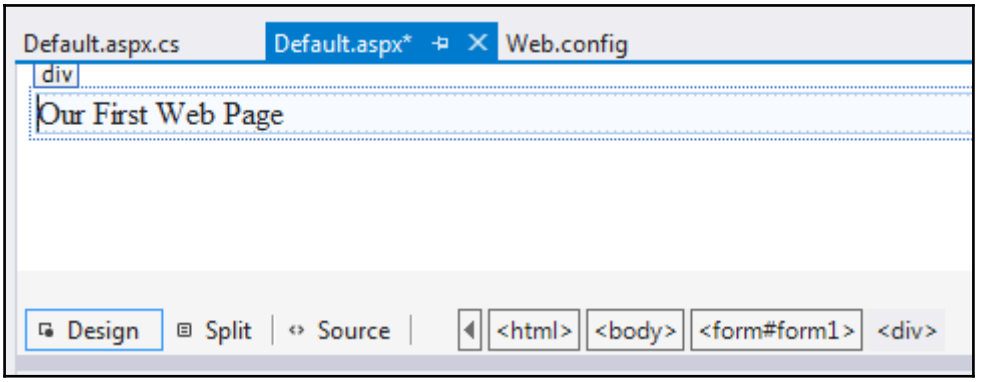

Our First page
localhost:57719/Default.aspx
Our First Web Page

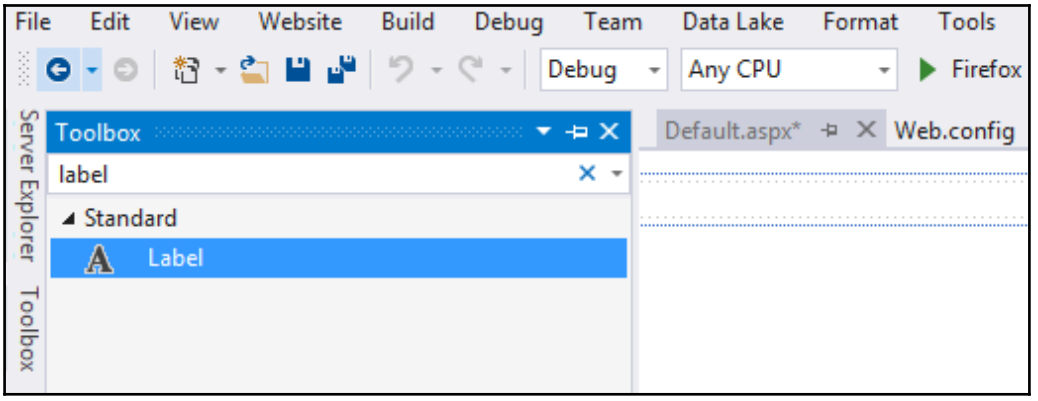
Chapter 4: Creating and Running a Page That Incorporates C#

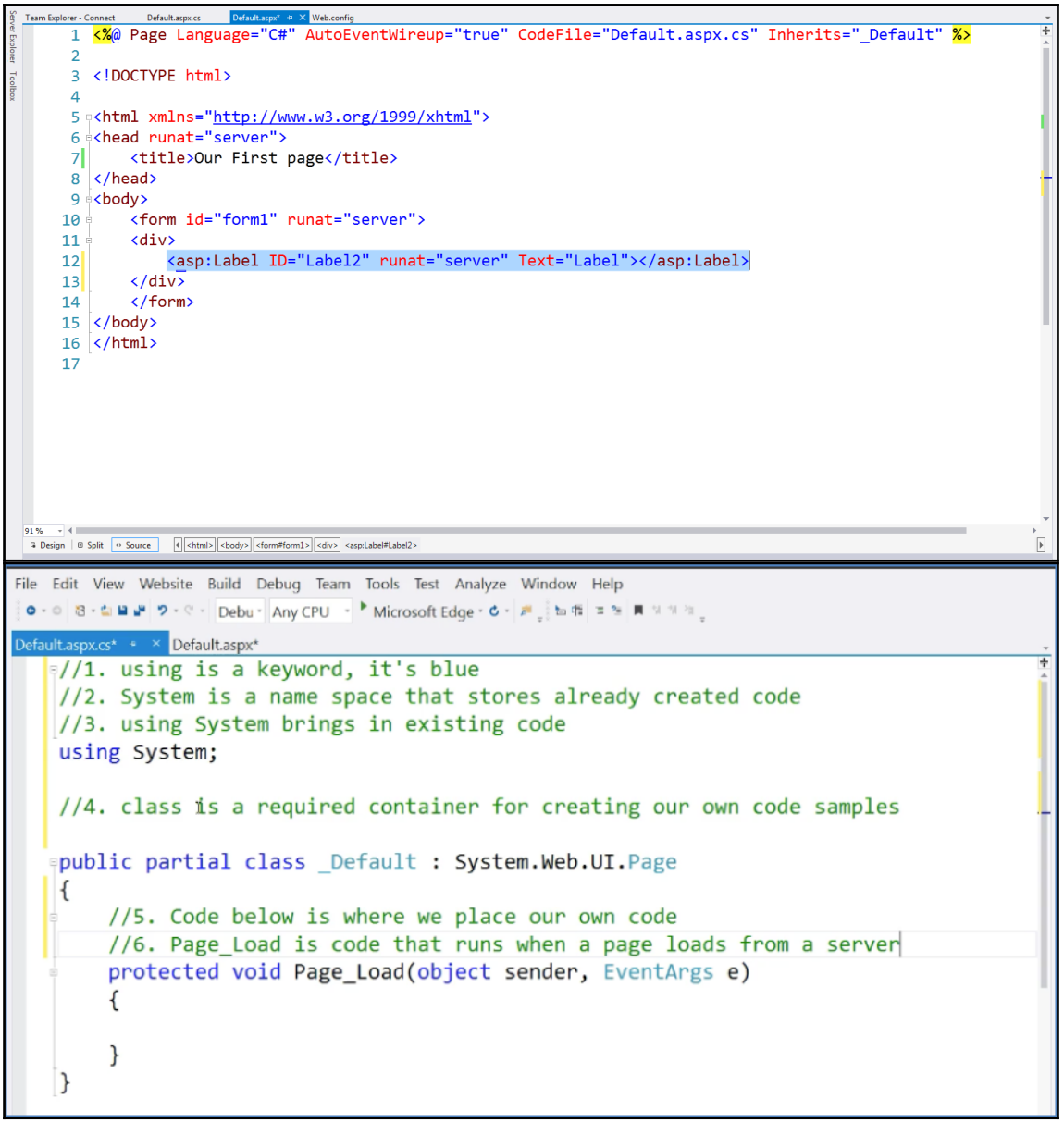




```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Web;
5  using System.Web.UI;
6  using System.Web.UI.WebControls;
7
8  public partial class _Default : System.Web.UI.Page
9  {
10     protected void Page_Load(object sender, EventArgs e)
11     {
12
13     }
14 }
```

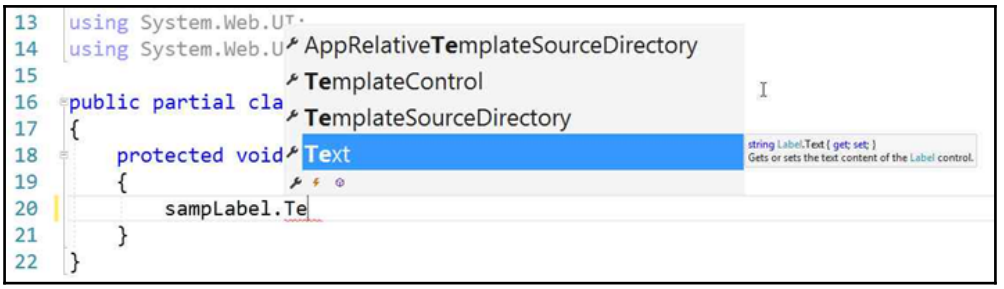


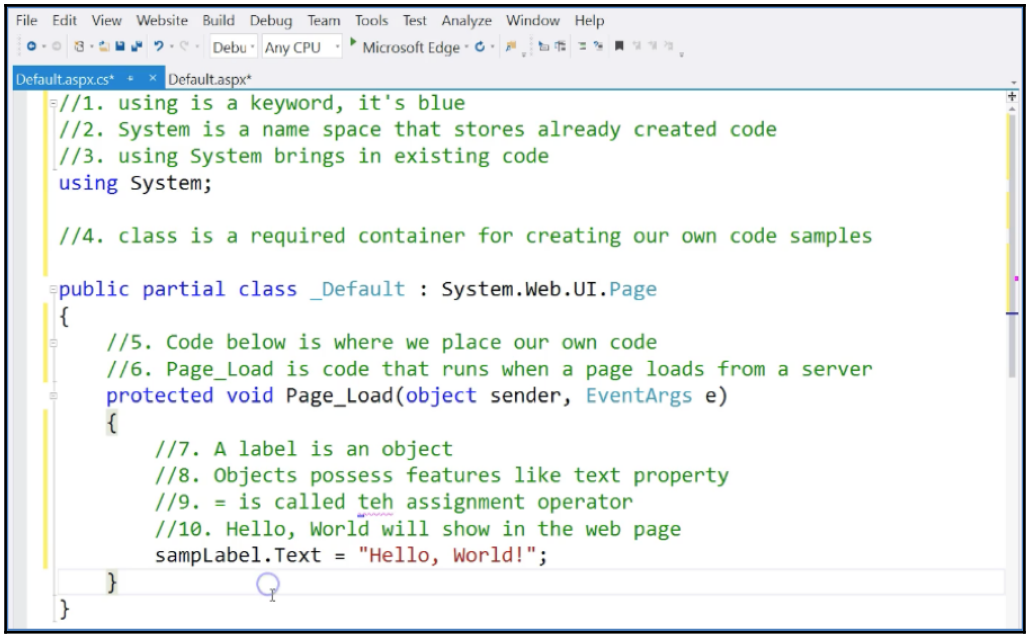



Team Explorer - Connect
Default.aspx.cs
Default.aspx*
Web.config
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
<title>Our First page</title>
</head>
<body>
<form id="form1" runat="server">

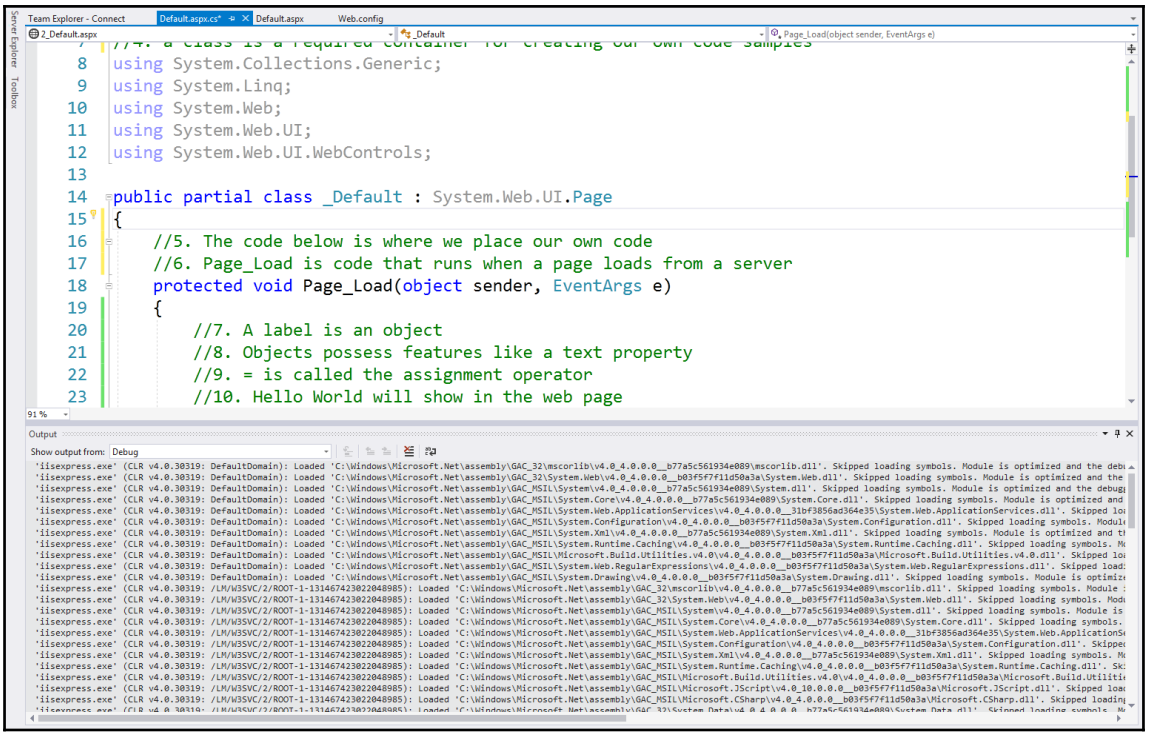
<asp:Label ID="Label2" runat="server" Text="Label"></asp:Label>

</form>
</body>
</html>
Design
Split
Source
File Edit View Website Build Debug Team Tools Test Analyze Window Help
Any CPU
Microsoft Edge
Default.aspx.cs*
Default.aspx*
//1. using is a keyword, it's blue
//2. System is a name space that stores already created code
//3. using System brings in existing code
using System;
//4. class is a required container for creating our own code samples
public partial class _Default : System.Web.UI.Page
{
//5. Code below is where we place our own code
//6. Page_Load is code that runs when a page loads from a server
protected void Page_Load(object sender, EventArgs e)
{
}
}

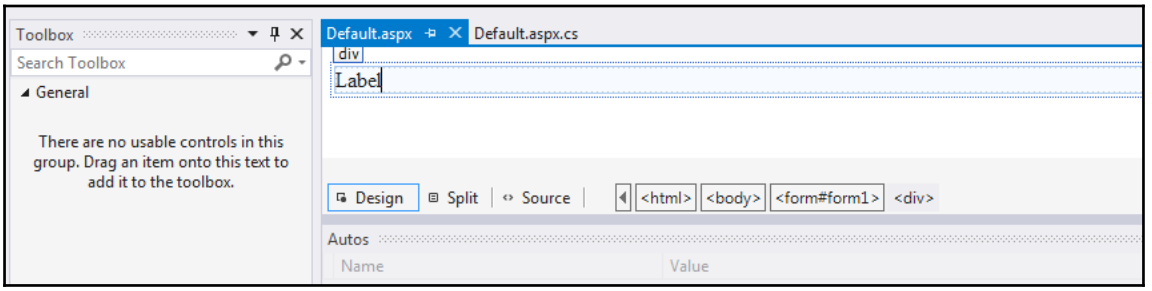

using System.Web.U
using System.Web.U
public partial cla
{
protected void
{
sampLabel.Te
}
}
AppRelativeTemplateSourceDirectory
TemplateControl
TemplateSourceDirectory
Text
string Label.Text { get; set; }
Gets or sets the text content of the Label control.

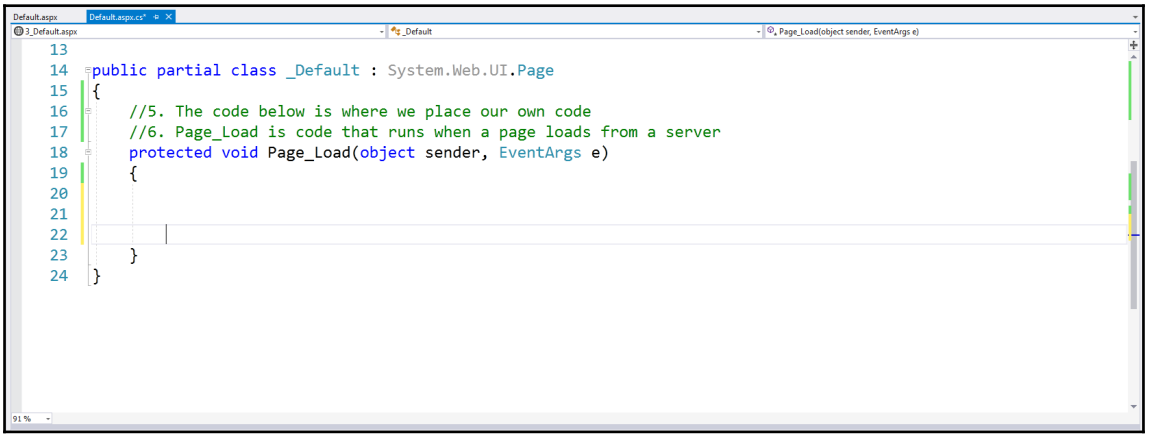

File Edit View Website Build Debug Team Tools Test Analyze Window Help
Debu
Any CPU
Microsoft Edge
Default.aspx.cs*
Default.aspx*
//1. using is a keyword, it's blue
//2. System is a name space that stores already created code
//3. using System brings in existing code
using System;
//4. class is a required container for creating our own code samples
public partial class _Default : System.Web.UI.Page
{
//5. Code below is where we place our own code
//6. Page_Load is code that runs when a page loads from a server
protected void Page_Load(object sender, EventArgs e)
{
//7. A label is an object
//8. Objects possess features like text property
//9. = is called teh assignment operator
//10. Hello, World will show in the web page
sampLabel.Text = "Hello, World!";
}
}


Our First page
localhost:57719/Default.aspx
Hello, World


Team Explorer - Connect
Default.aspx.cs*
Default.aspx
Web.config
2_Default.aspx
_Default
Page_Load(object sender, EventArgs e)
//4. a class is a required container for creating our own code samples
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.UI;
using System.Web.UI.WebControls;
public partial class _Default : System.Web.UI.Page
{
//5. The code below is where we place our own code
//6. Page_Load is code that runs when a page loads from a server
protected void Page_Load(object sender, EventArgs e)
{
//7. A label is an object
//8. Objects possess features like a text property
//9. = is called the assignment operator
//10. Hello World will show in the web page
Output
Show output from: Debug

Chapter 5: Creating and Using a Single Variable






```
//7. You see a group of people and the height changes
double height = 65.00; //8. Declares and set a variable value
```

struct System.Double
Represents a double-precision floating-point number.

```
    sampLabel.Text = "John;s height is" + height;
```

string string.operator +(string left, object right)

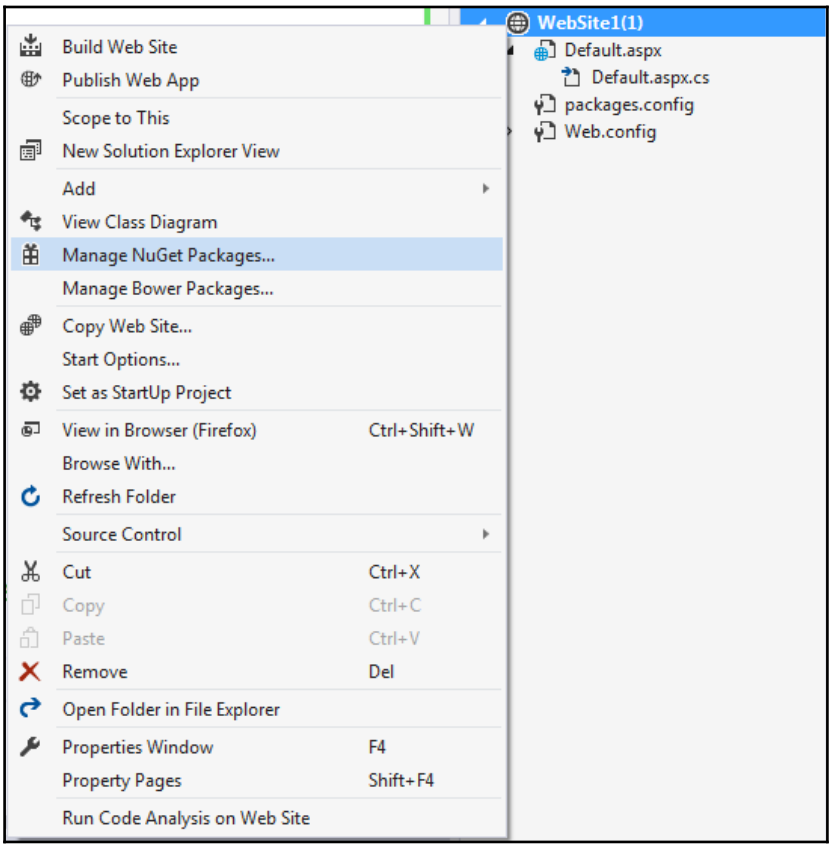
```
}
```

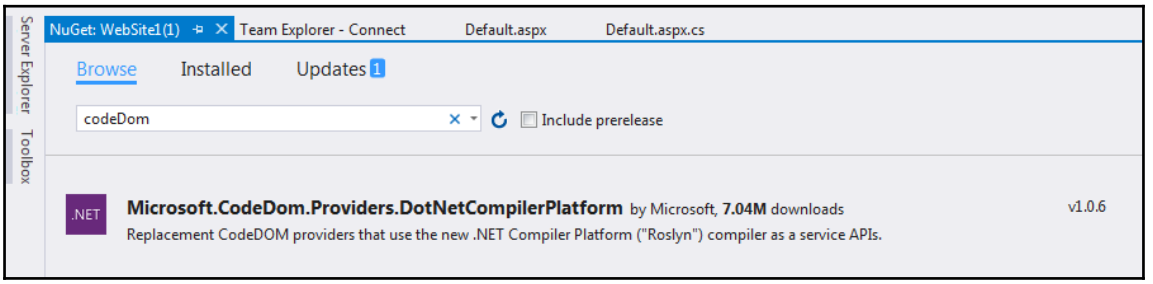
```
sampLabel.Text = "John's height is " + height;
```

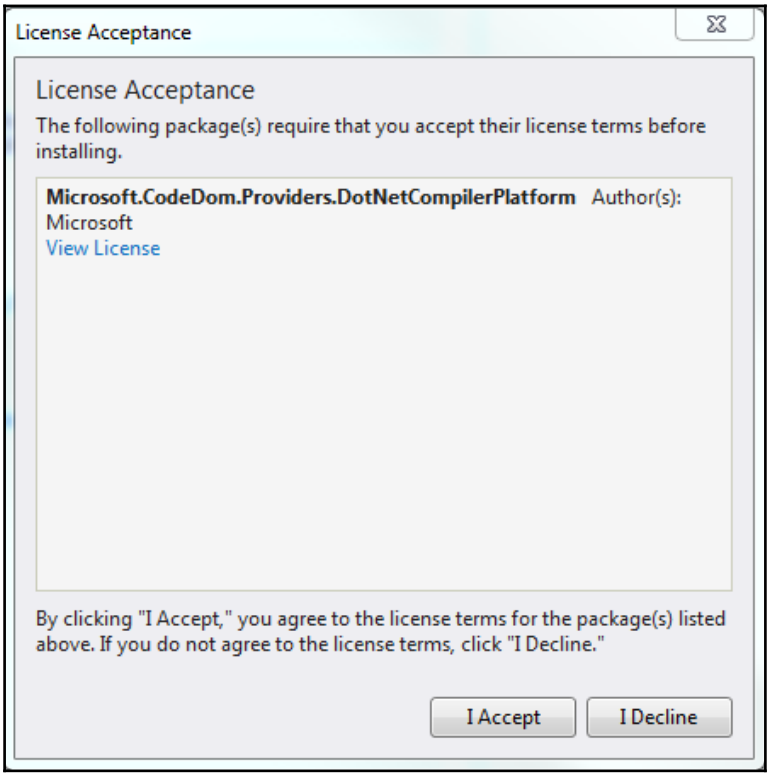
(field) System.Web.UI.WebControls.Label _Default.sampLabel

```
<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head><title>

</title></head>
<body>
    <form method="post" action="./Default.aspx" id="form1">
<div class="aspNetHidden">
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
value="Pn58eK0EXfbDOMnjb9Qf/Epfc1jZyQknPgkjH9RviLNFtk1eJqyT6v06ucE6y4PQmD2I2fDEQe6/pZKFoPkqjfZqMDn8x
2+Gi3ZmQpk6niXEgR/nfS1qkq247zYpF1A2NUev6GSGp1/E2aXPUvaktA==" />
</div>

    <div>

        <span id="sampLabel">John's height is 65</span>

    </div>

<div class="aspNetHidden">
```

Chapter 6: String Interpolation and Updating Visual Studio








```
Successfully installed 'Microsoft.CodeDom.Providers.DotNetCompilerPlatform 1.0.6' to WebSite1(1)
Executing nuget actions took 3.21 sec
Time Elapsed: 00:00:03.8366970
========== Finished ==========
```

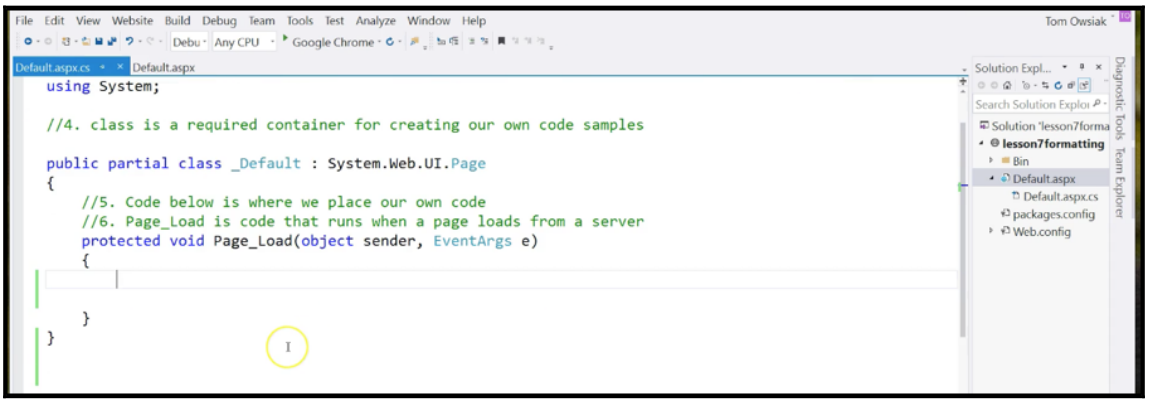

view-source:localhost:54485/Default.aspx
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head><title>
</title></head>
<body>
<form method="post" action="./Default.aspx" id="form1">

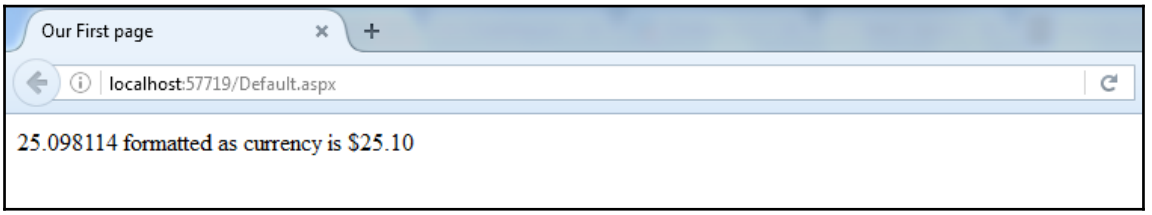
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
value="yjrrmC+KzqFjHtv/rp3M8oVBgViT35HCYgTyQl/zplXmZf1vsJ0jl/R4riv5yekjPbcDT3BGots2cCc5Zx25OsPnVDA0s
LsOFE3r2BAVxAax0VUPXlm8sxZmQemhqYiEqJ4X+PcOdTK8bcu7XYOsxg==" />

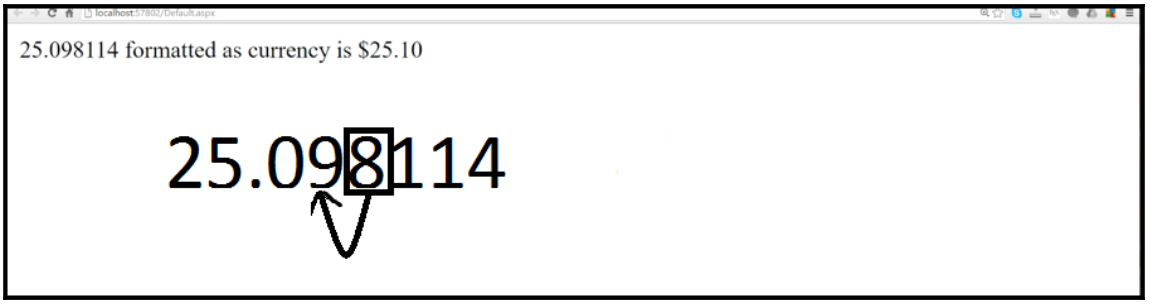
Height is 65

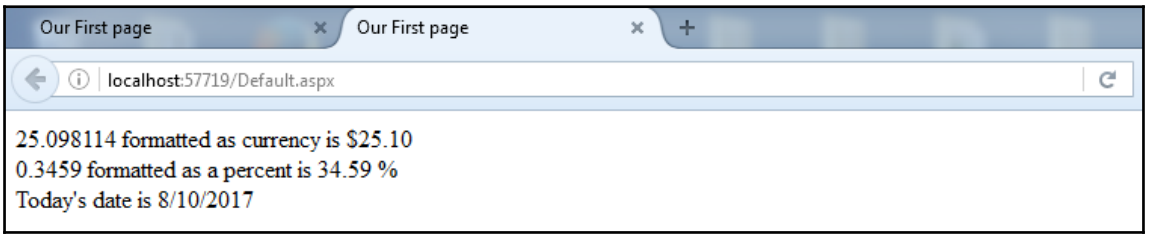
<input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334"
/>
</form>

Chapter 7: Formatting Output Strings for More Professional Results



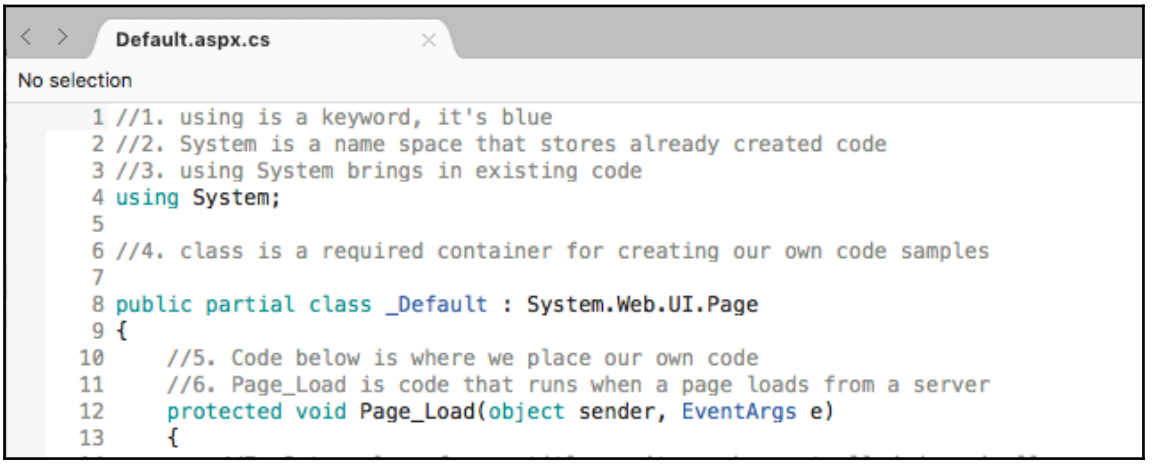


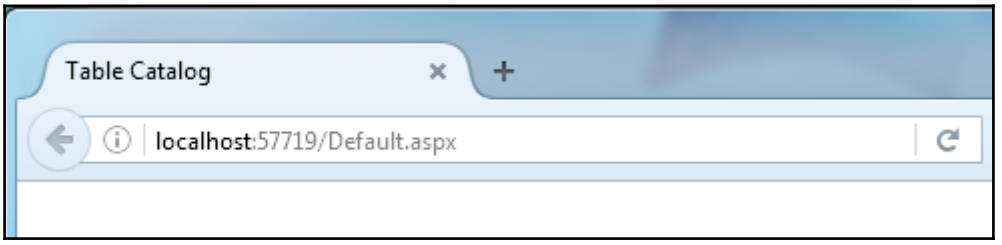




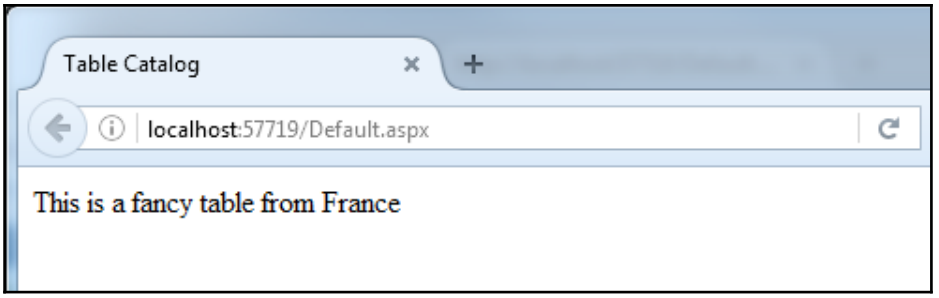

```
1
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head><title>
7      Our First page
8  </title></head>
9  <body>
10     <form method="post" action="./Default.aspx" id="form1">
11 <div class="aspNetHidden">
12 <input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
   value="AxPUNIFadHWyRZkHab6eoobCN/O9BJRLu6DTCbrTSeARWCPtsbG+9R2NyJzzOD45tKtb4PpRV7qF3hrQNr+dHayvPeLjgeSItpWZDbRI
   FagFdzXonOMQQ6/9TIE4lhAWVp/Nn7g6XszCVPhuYKH2WeUe3WNl1nxQ36RnguRBXfioD9uoaZTCqDX+dYqHVUqUtMYY6Q2rIgR+mGjj+OvF
   /GkG1lhputMD3hk4jOb5J6dhnNt8xEhUpI5FxKirlkcomzObyT7D/UTe6fBhcNIc5g==" />
13 </div>
14
15     <div>
16         <span id="sampLabel">25.098114 formatted as currency is $25.10<br>0.3459 formatted as a percent is
   34.59 %<br> Today's date is 8/10/2017</span>
17     </div>
18
19 <div class="aspNetHidden">
20
21     <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334" />
22 </div></form>
23
24 <!-- Visual Studio Browser Link -->
25 <script type="application/json" id="__browserLink_initializationData">
26     {"appName":"Firefox","requestId":"e03b730b7b0043c196d084a391cfa962"}
27 </script>
28 <script type="text/javascript" src="http://localhost:58205/36282184db494324a3020cfb7b1bc0fd/browserLink"
   async="async"></script>
29 <!-- End Browser Link -->
30
31 </body>
32 </html>
33
```

Chapter 8: Using Variables and Data Types





```
<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head><title>
    Table Catalog
</title></head>
<body>
    <form method="post" action="./Default.aspx" id="form1">
<div class="aspNetHidden">
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
value="Uq24IbEAVun5Tdc7R1YqNb9dsndjfxqGFUMsWVDP7VCFdmxFdVhYyqaL+bEJatjTdnzALoe/PYCg9Fq1FcpvXbS8fY2X8Gmy3CPD2xId
n0A=" />
</div>

    <div>
    </div>

<div class="aspNetHidden">

    <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334" />
</div></form>

<!-- Visual Studio Browser Link -->
<script type="application/json" id="__browserLink_initializationData">
    {"appName":"Firefox","requestId":"92497e0086ac417ba62aa53f8912cfb9"}
</script>
<script type="text/javascript" src="http://localhost:58205/36282184db494324a3020cfb7b1bc0fd/browserLink"
async="async"></script>
<!-- End Browser Link -->

</body>
</html>
```




```
sampLabel.Text = desc;
```

string System.Web.UI.WebControls.Label.Text { get; set; }
Gets or sets the text content of the System.Web.UI.WebControls.Label control.

```
sampLabel.Text = desc;
```

(local variable) string desc

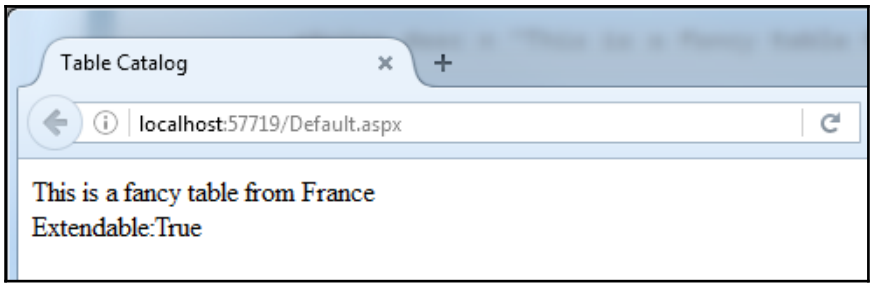
```
1
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head><title>
7      Table Catalog
8  </title></head>
9  <body>
10     <form method="post" action="./Default.aspx" id="form1">
11 <div class="aspNetHidden">
12 <input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
   value="CHnhiR7QuwV7vvVmo1d3Uxvo6NfgMveHXRfet+U5dcGUdSwvVMIXNZXC31/kJPqjZdtfh9ILpwVTksVG3zOscJBmLxb+sy+IGFzstDmQ
   WoToksB2xOL1YZvs/dUa6gzsR+SlOksYWCkBBadLbYLDG6kZHqTzVrLunSpu0Xb7HKA=" />
13 </div>
14
15     <div>
16         <span id="sampLabel">This is a fancy table from France</span>
17     </div>
18
19 <div class="aspNetHidden">
20
21     <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334" />
22 </div></form>
23
24 <!-- Visual Studio Browser Link -->
25 <script type="application/json" id="__browserLink_initializationData">
26     {"appName":"Firefox","requestId":"41d4f2dbd8c94c4ab827431708ade5d6"}
27 </script>
28 <script type="text/javascript" src="http://localhost:58205/36282184db494324a3020cfb7b1bc0fd/browserLink"
   async="async"></script>
29 <!-- End Browser Link -->
30
31 </body>
32 </html>
33
```

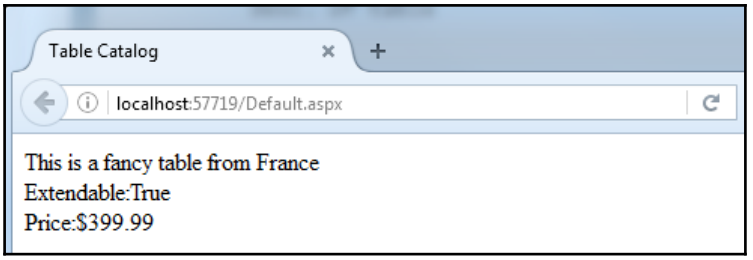
```
bool extendable = true;
```

struct System.Boolean
Represents a Boolean (true or false) value.


```
bool extendable = true;
```

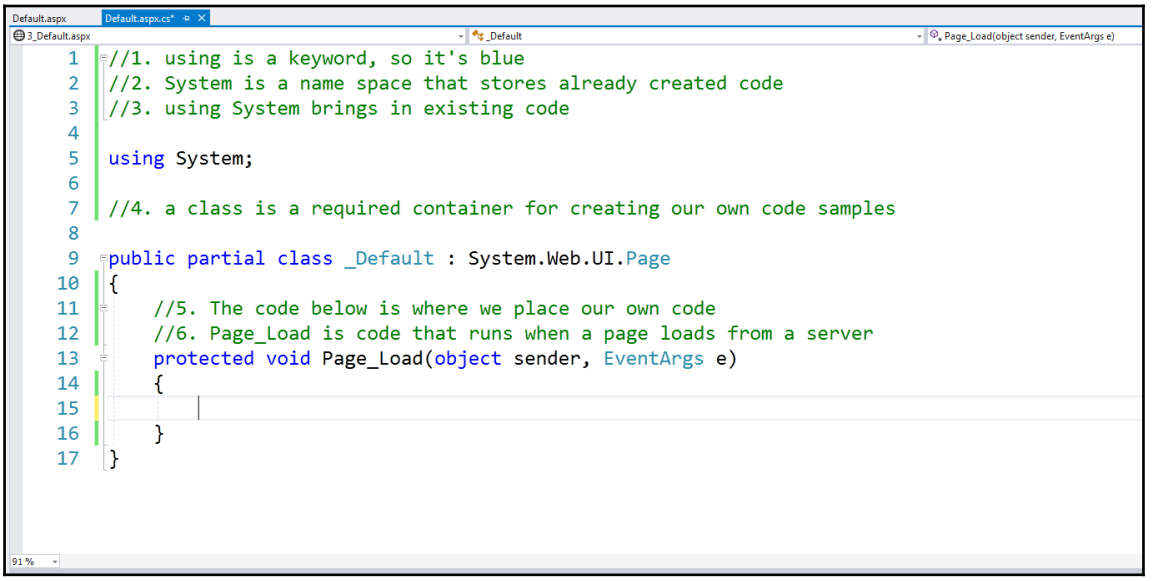
struct System.Boolean
Represents a Boolean (true or false) value.

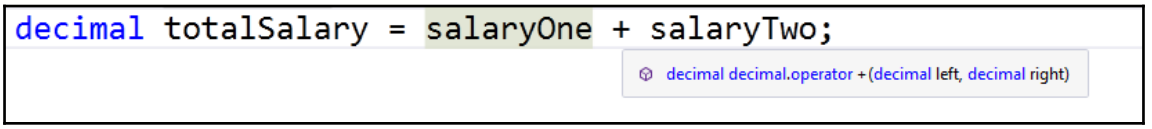


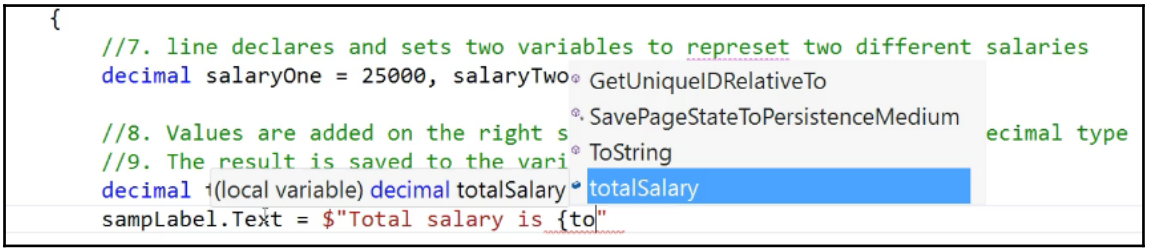


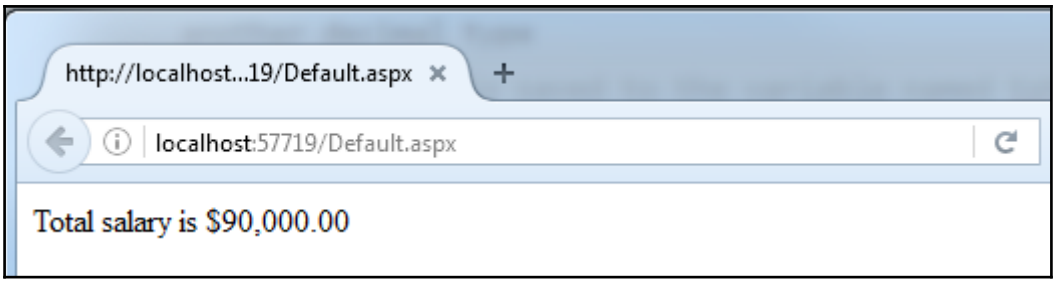

```
1
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head><title>
7      Table Catalog
8  </title></head>
9  <body>
10     <form method="post" action="./Default.aspx" id="form1">
11 <div class="aspNetHidden">
12 <input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
   value="OdXbCzH2By3tawD+jUUglhfTG0uElrUOBN1iPRej1LOaglrkM2lKlngykXcPAEcBZSHryU8AvqHr6MpJDQbbAedbWMNu8MmLAltCNdET
   nD8pqsIFYrUP5pWgrm5zn4ART01mBv8M5tnJJ0l7HyJNpaYVB4C+fooWr4EzN0OF161OPFVHPByz7Upj3dGH8Xd71Dn4d5y1Vjs7RXOkJqYM7g=
   =" />
13 </div>
14
15     <div>
16         <span id="sampLabel">This is a fancy table from France<br>Extendable:True<br>Price:$399.99</span>
17     </div>
18
19 <div class="aspNetHidden">
20
21     <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334" />
22 </div></form>
23
24 <!-- Visual Studio Browser Link -->
25 <script type="application/json" id="__browserLink_initializationData">
26     {"appName":"Firefox","requestId":"2e112e9d12c74d92bfe8a2b275af7ed7"}
27 </script>
28 <script type="text/javascript" src="http://localhost:58205/36282184db494324a3020cfb7b1bc0fd/browserLink"
   async="async"></script>
29 <!-- End Browser Link -->
30
31 </body>
32 </html>
33
```

Chapter 9: Computed Variables and Basic Math



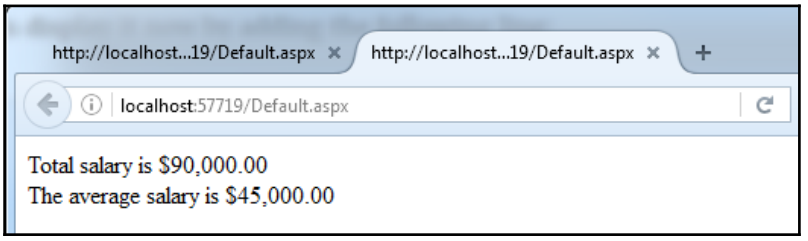







```
decimal totalSalary = salaryOne + salaryTwo;
```

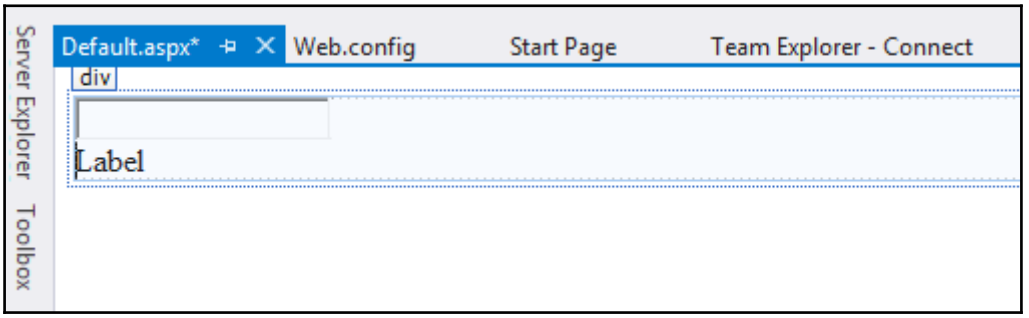
decimal decimal.operator +(decimal left, decimal right)



```
<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head><title>

</title></head>
<body>
    <form method="post" action="./Default.aspx" id="form1">
<div class="aspNetHidden">
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
value="ZKf7itlS64XdKHL0NWZUDVeiMxYGQRjbtLsOBhiFHsPmDS2idEy1wjvnNJs1XaolqlwgRh+Xy3OEDm+Zspk9LanRGq+PjjNUO1OVZInP
jtGWbdkDrXau29i1+N6Xtvm0gJBjT5MOzTS7xTE204yMEvQ363D3vZTn6rCaVyrZFdgHbIOuH3Qumh2oXXDyLtxwQjJRzRbDVMwfv17fND5H/g=
=" />
</div>

    <div>
        <span id="sampLabel">Total salary is $90,000.00<br>The average salary is $45,000.00</span>
    </div>

<div class="aspNetHidden">

    <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334" />
</div></form>

<!-- Visual Studio Browser Link -->
<script type="application/json" id="__browserLink_initializationData">
    {"appName":"Firefox","requestId":"62d678a3adef450d96fac04c672c6404"}
</script>
<script type="text/javascript" src="http://localhost:58205/36282184db494324a3020cfb7b1bc0fd/browserLink"
async="async"></script>
<!-- End Browser Link -->

</body>
</html>

```

Chapter 10: Interacting with Users Through the Web Page

```
<head><title>
        Table Catalog
</title></head>
<body>
    <form method="post" action="./Default.aspx" id="form1">
<div class="aspNetHidden">
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE"
value="T9+fgAPir2+06n2Xae7LlyBaGlC2ndTjF3/KIiv9PmLixh3QJF6VA4dBxcOsMYc36JhL9htMBE2uKI+30weQ3pH868Dnn
JwpJukQDW9k/rVQ7bi9F7FrG5KS77q1X5BTHk00enz3EytE3lWLD/dHC+xRK7gJpGG5NdpV5eRhEoE5+3djoTl83A1tOVId3ALWk
VjpGxCSx9V0cBCuu4jZeg==" />
</div>

    <div>
        <span id="sampLabel">This is a fancy table from
France<br>Extendable:True<br>Price:$399.99</span>
    </div>

<div class="aspNetHidden">

        <input type="hidden" name="__VIEWSTATEGENERATOR" id="__VIEWSTATEGENERATOR" value="CA0B0334"
/>
</div></form>
```




```
<div>
    <asp:TextBox ID="TextBox1" runat="server" OnTextChanged="TextBox1_TextChanged"></asp:TextBox>
    <asp:Label ID="sampLabel" runat="server" Text="Label"></asp:Label>
</div>
```

```
//8. First read the value from the text property of the box
string input = TextBox1.Text;
```

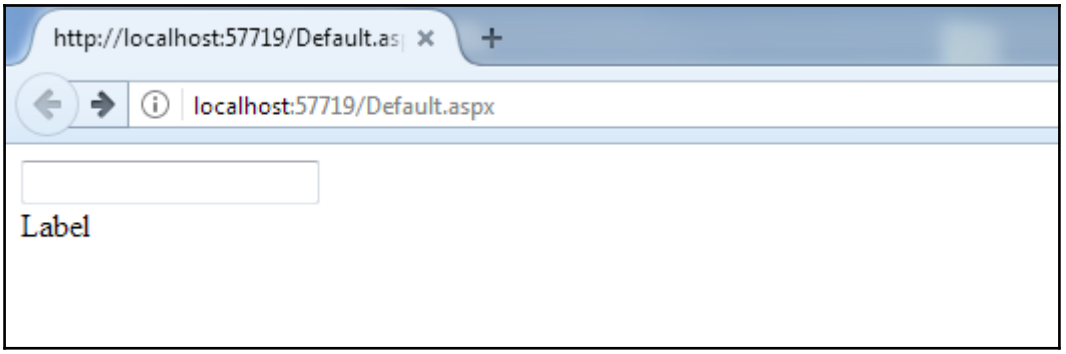
```
//8. First read the value from the text property of the box
string input = TextBox1.Text;
```

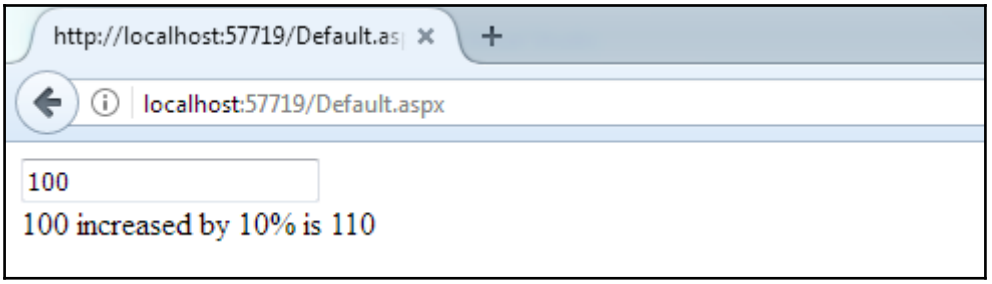
string System.Web.UI.WebControls.TextBox.Text { get; set; }
Gets or sets the text content of the System.Web.UI.WebControls.TextBox control.

```
double x = Convert.ToDouble(input);
```

double Convert.ToDouble(string value) (+ 17 overloads)
Converts the specified string representation of a number to an equivalent double-precision floating-point number.

Exceptions:
FormatException
OverflowException



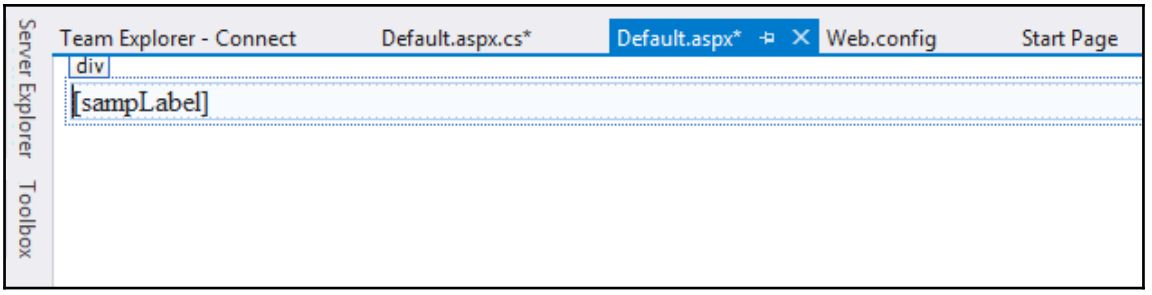



```
//10. A method is a block of code that accepts input, operates on
double x = Convert.ToDouble(input);

//11. x*1.1 produces 110% of the val                value is then
sampLabel.Text = $"{x} increased by                ";
```

Exception User-Unhandled
System.FormatException: 'Input strin
was not in a correct format.'

Chapter 11: Using Method Chaining to Write More Compact Code


```
<div>
    <asp:TextBox ID="TextBox1" runat="server" OnTextChanged="TextBox1_TextChanged"></asp:TextBox><br />
    <asp:Label ID="sampLabel" runat="server" Text=""></asp:Label>
</div>
```




```
bool isLetterPresent = (TextBox1.Text).ToLower().Contains("e");
```

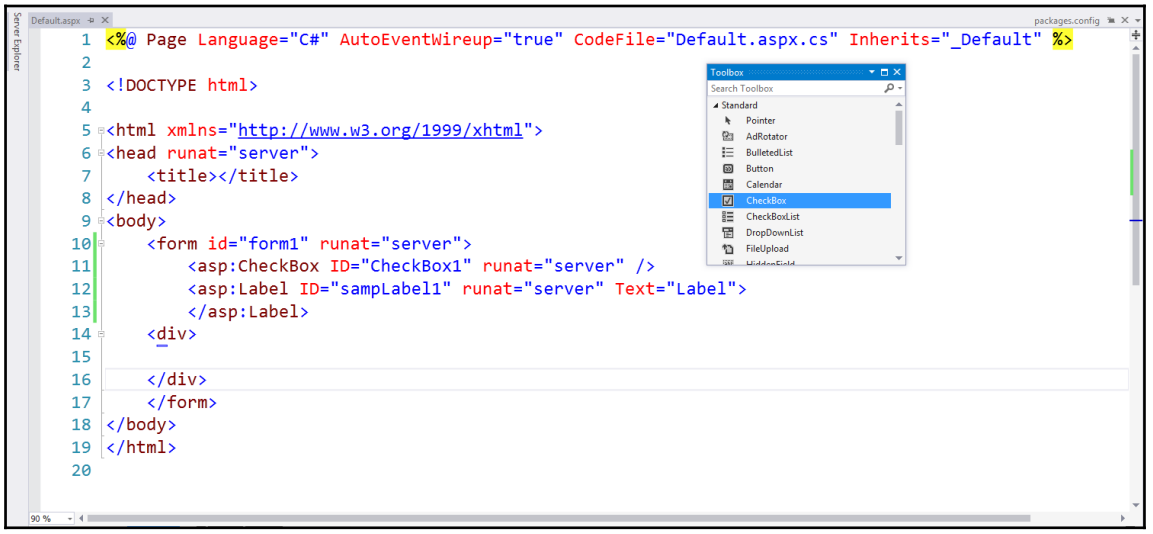
```
(TextBox1.Text).ToLower().Contains("e");
```

bool string.Contains(string value)
Returns a value indicating whether a specified substring occurs within this string.

Exceptions:
ArgumentNullException


```
<div>
    <input name="TextBox1" type="text" value="fly" id="TextBox1" />
    <span id="sampLabel">It's False that your input contains the letter e.</span>
</div>
```

Chapter 12: Reacting to a Single Condition with If/Else Blocks



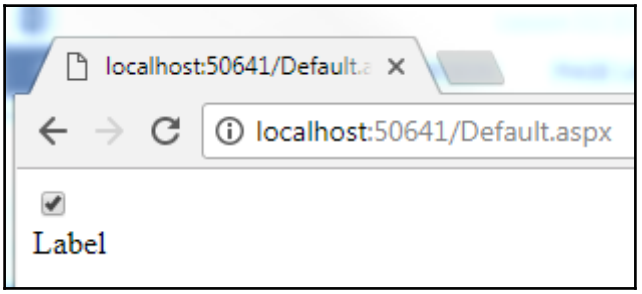
Default.aspx

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
        <asp:CheckBox ID="CheckBox1" runat="server" />
        <asp:Panel ID="Panel1" runat="server">
            <asp:Label ID="sampLabel1" runat="server" Text="Label">
            </asp:Label>
        </asp:Panel>
    <div>

    </div>
    </form>
</body>
</html>
```

Toolbox

pA

- Standard
  - Panel
- Data
  - DataPager
- Validation
  - CompareValidator
- Navigation
  - SiteMapPath



```
if (CheckBox1.Checked //7. Checks to see wheter a check box is checked
{
```

bool CheckBox.Checked { get; set; }
Gets or sets a value indicating whether the CheckBox control is checked.

```
Panel1.Visible = true;// 8. Code runs when a user wants to see the panel.
```

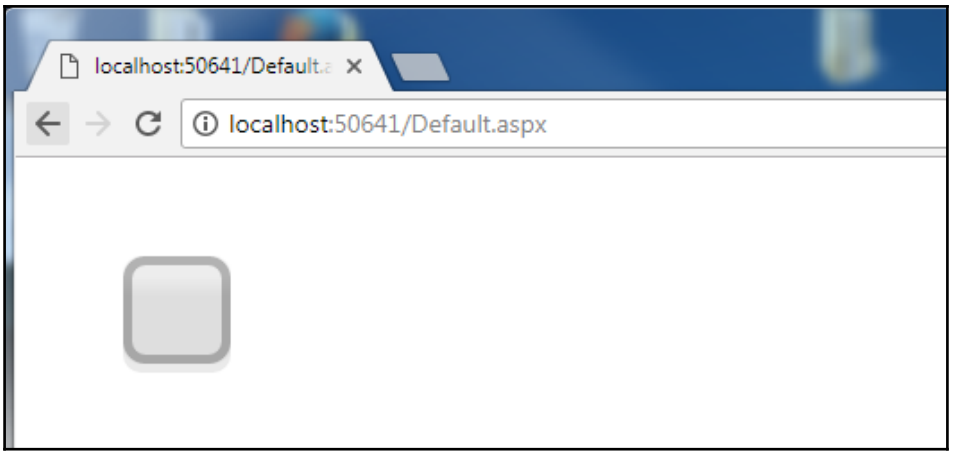
struct System.Boolean
Represents a Boolean (true or false) value.

```
Panel1.Visible = true;// 8. Code runs when a user wants to see the panel.
```

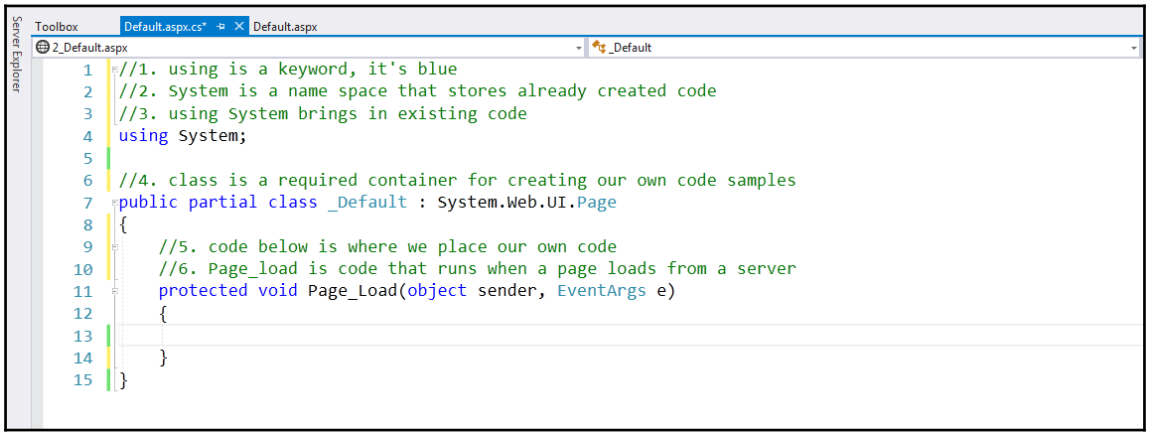
bool System.Web.UI.Control.Visible { get; set; }
Gets or sets a value that indicates whether a server control is rendered as UI on the page.

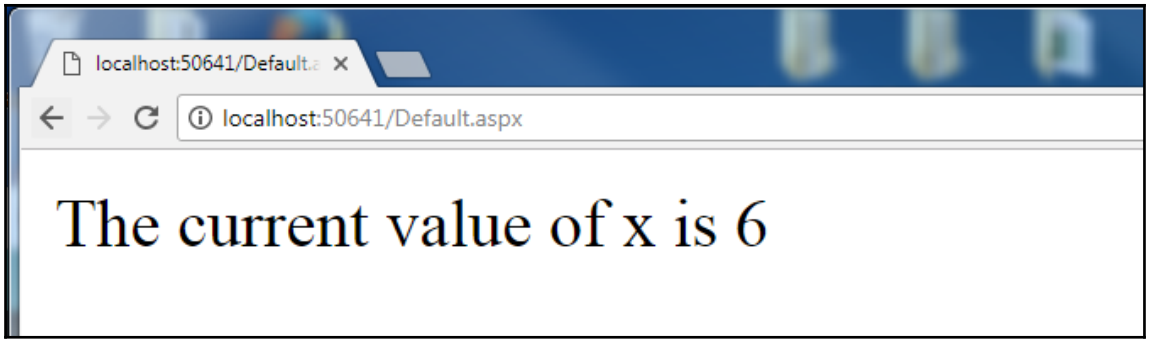
```
Panel1.Visible = false; //9. Hides panel when user unchecks the box
```

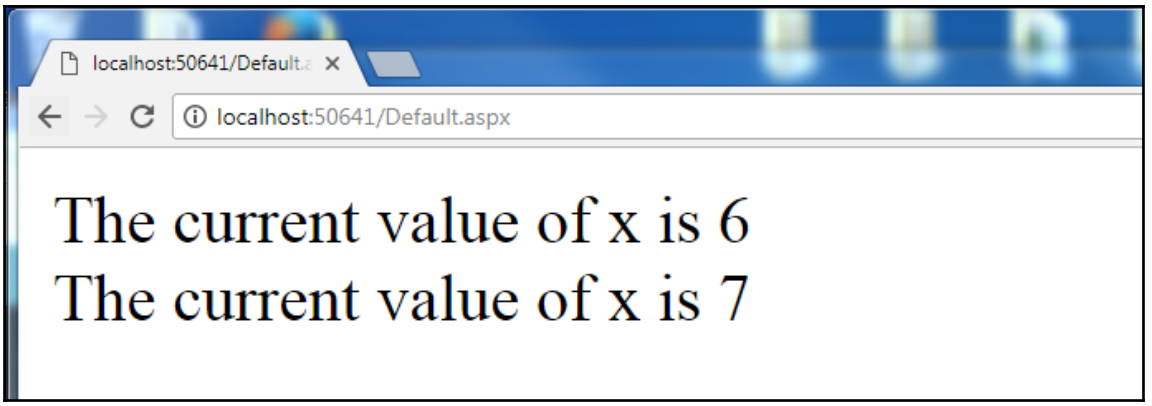
struct System.Boolean
Represents a Boolean (true or false) value.


localhost:50641/Default.a
localhost:50641/Default.aspx

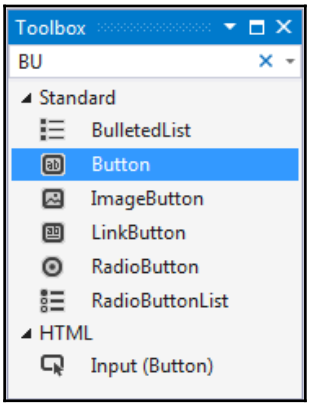
Chapter 13: Making a Variable Grow by Adding 1

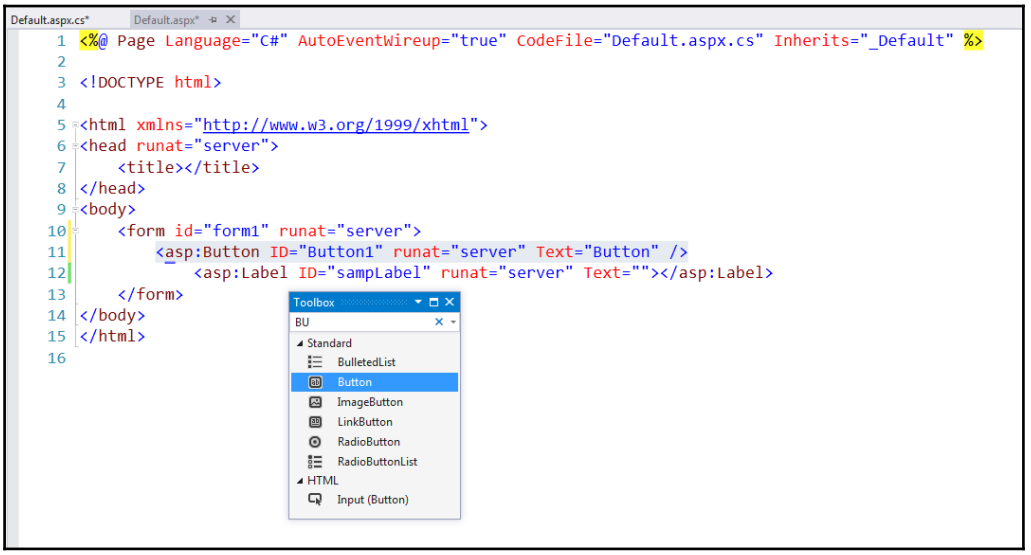


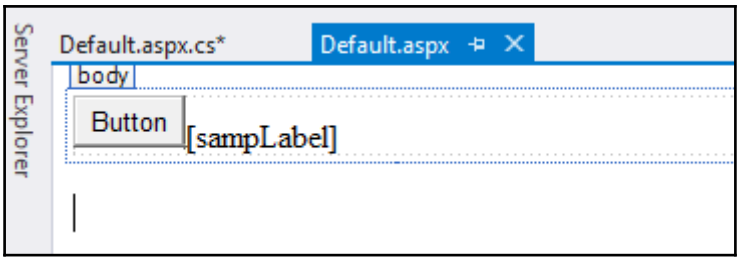


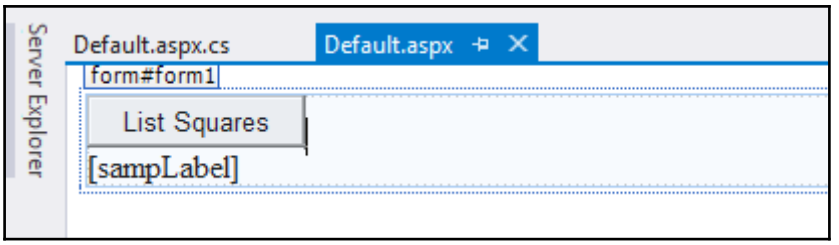

localhost:50641/Default.a
localhost:50641/Default.aspx
The current value of x is 6
The current value of x is 7

Chapter 14: Repeating Blocks of Code with While Loops



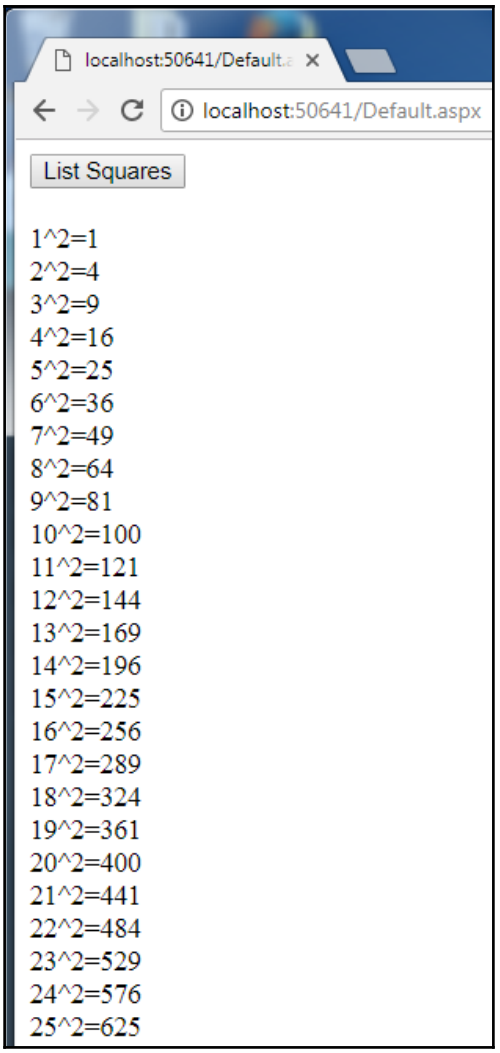


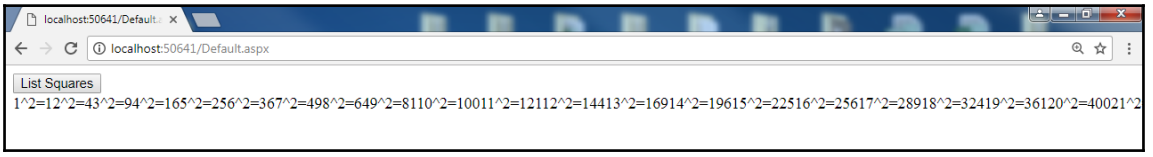




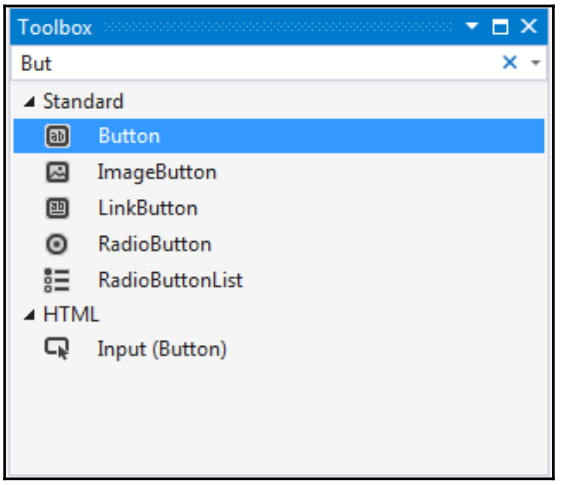

```
    //9. counter<=howmanytimes is the logical condition that controls the operation of the loop
    while(counter<=howManyTimes)
}
```

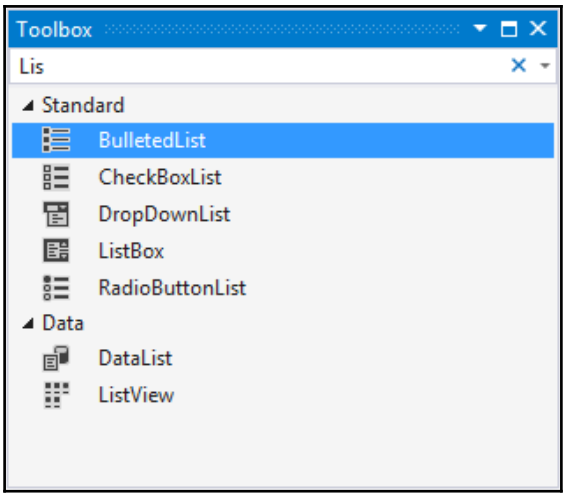
bool int.operator <=(int left, int right)


localhost:50641/Default.a
localhost:50641/Default.aspx
List Squares
1^2=1
2^2=4
3^2=9
4^2=16
5^2=25
6^2=36
7^2=49
8^2=64
9^2=81
10^2=100
11^2=121
12^2=144
13^2=169
14^2=196
15^2=225
16^2=256
17^2=289
18^2=324
19^2=361
20^2=400
21^2=441
22^2=484
23^2=529
24^2=576
25^2=625

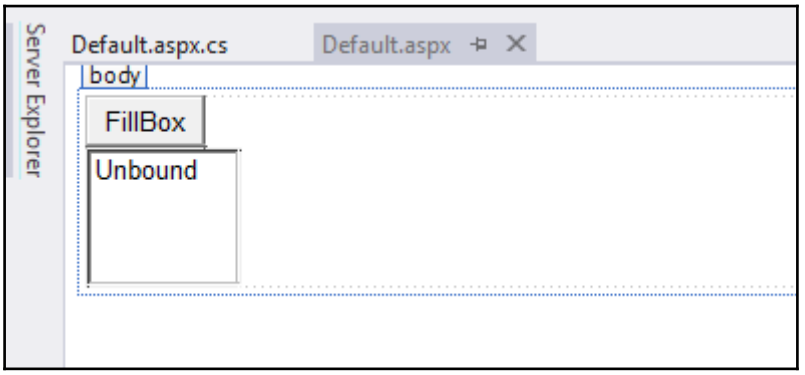

localhost:50641/Default.a
localhost:50641/Default.aspx
List Squares
1^2=12^2=43^2=94^2=165^2=256^2=367^2=498^2=649^2=8110^2=10011^2=12112^2=14413^2=16914^2=19615^2=22516^2=25617^2=28918^2=32419^2=36120^2=40021^2

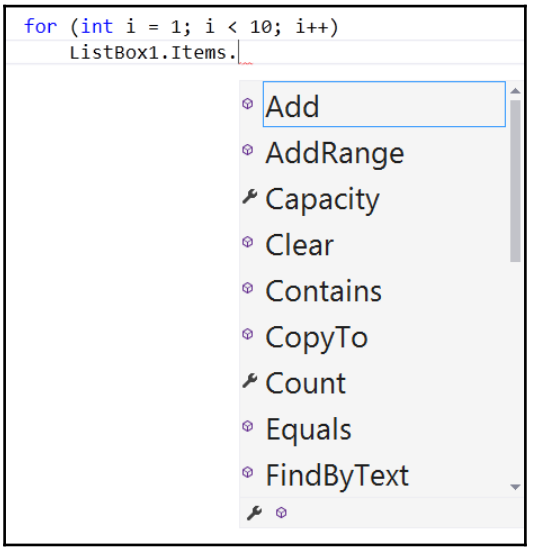
Chapter 15: Repeating Blocks of Code with For Loops




Toolbox
Lis
Standard
BulletedList
CheckBoxList
DropDownList
ListBox
RadioButtonList
Data
DataList
ListView


Default.aspx.cs
Default.aspx*
Server Explorer
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
<title></title>
</head>
<body>
<form id="form1" runat="server">
<asp:Button ID="Button1" runat="server" Text="FillBox"/> </br>
<asp:ListBox ID="ListBox1" runat="server"></asp:ListBox>
</form>
</body>
</html>
Toolbox
Listb
Standard
ListBox


Server Explorer
Default.aspx.cs
Default.aspx
body
FillBox
Unbound


for (int i = 1; i < 10; i++)
ListBox1.Items.
Add
AddRange
Capacity
Clear
Contains
CopyTo
Count
Equals
FindByText

```
for (int i = 1; i < 10; i++)
    ListBox1.Items.Add(i);
```

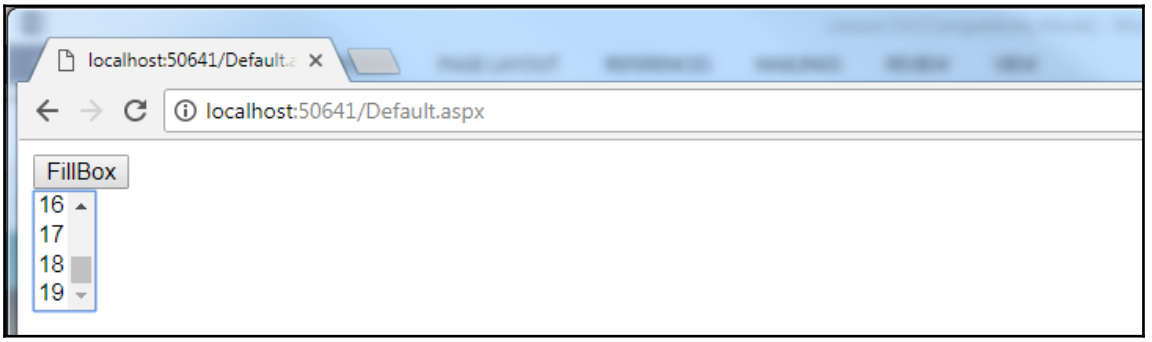
(local variable) int i

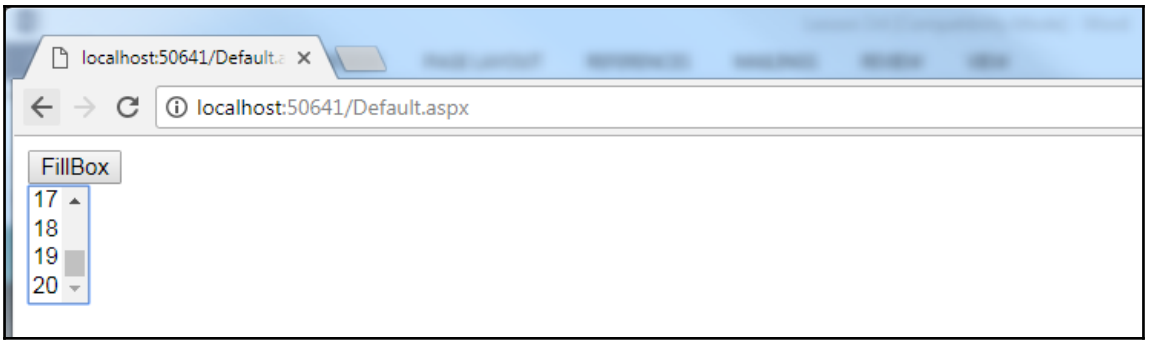
Argument 1: cannot convert from 'int' to 'string'

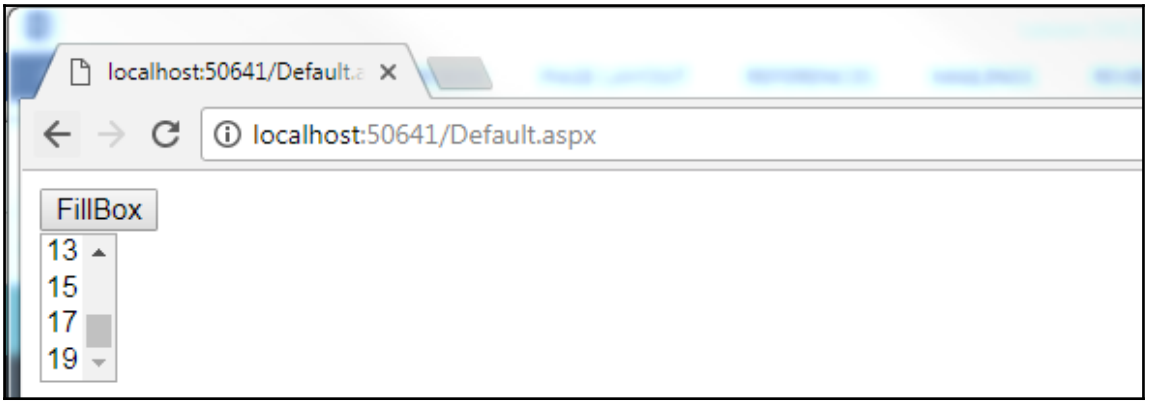
```
for (int i = 1; i < 10; i++)
    ListBox1.Items.Add(i.);
```

- CompareTo
- Equals
- GetHashCode
- GetType
- GetTypeCode
- ToString

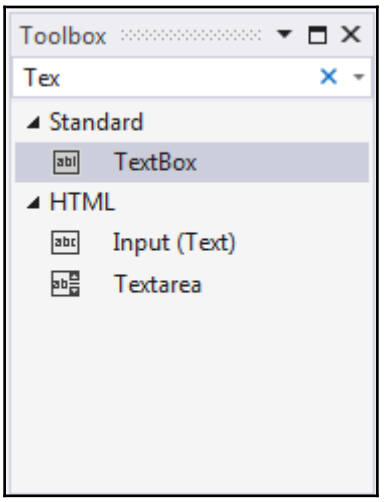
string int.ToString() (+ 3 overloads)
Converts the numeric value of this instance to its equivalent string representation.

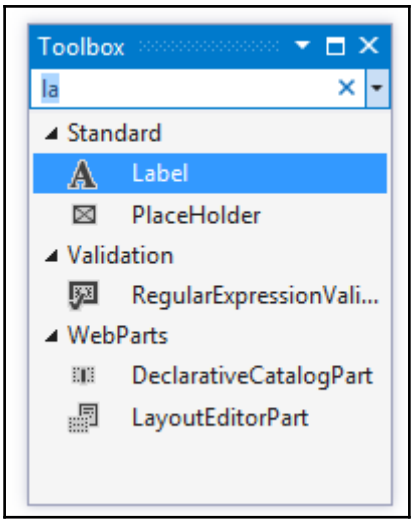



localhost:50641/Default.a
localhost:50641/Default.aspx
FillBox
17
18
19
20

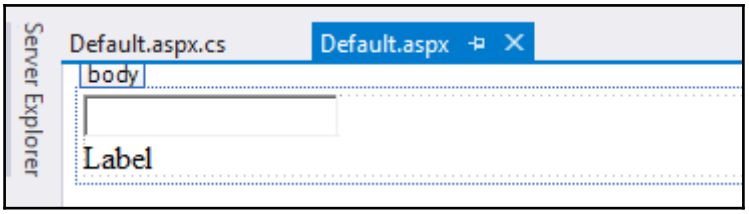

localhost:50641/Default.a
localhost:50641/Default.aspx
FillBox
13
15
17
19

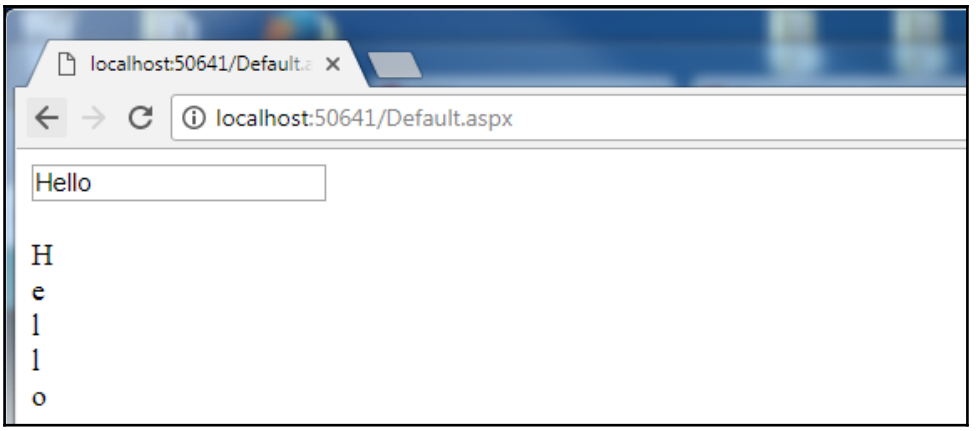
Chapter 16: Iterating Over Collections with foreach Loops

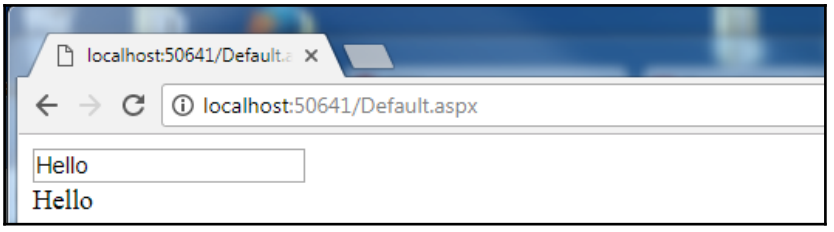


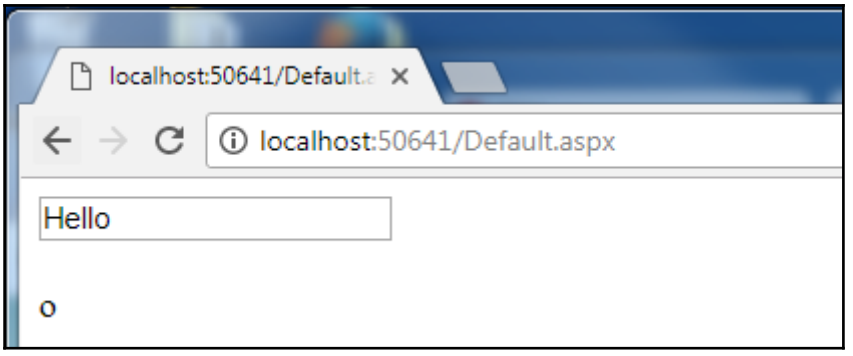

Toolbox
la
Standard
Label
PlaceHolder
Validation
RegularExpressionVali...
WebParts
DeclarativeCatalogPart
LayoutEditorPart


Default.aspx.cs
Default.aspx*
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
<title></title>
</head>
<body>
<form id="form1" runat="server">
<asp:TextBox ID="TextBox1" runat="server"></asp:TextBox>
<asp:Label ID="Label1" runat="server" Text="Label"></asp:Label>
</form>
</body>
</html>
Toolbox
la
Standard
Label
PlaceHolder
Validation
RegularExpressionVali...
WebParts
DeclarativeCatalogPart
LayoutEditorPart

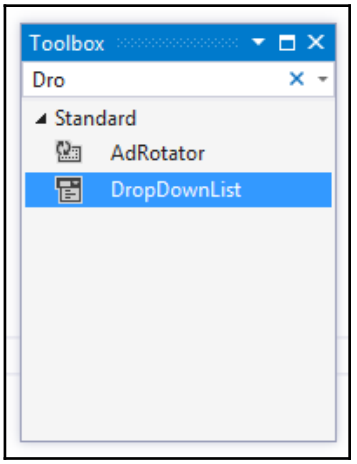

Server Explorer
Default.aspx.cs
Default.aspx
body
Label

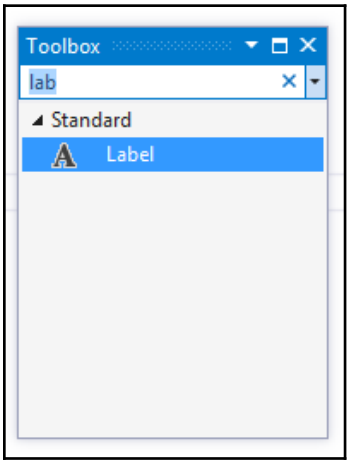

localhost:50641/Default.a
localhost:50641/Default.aspx
Hello
H
e
l
l
o


localhost:50641/Default.a
localhost:50641/Default.aspx
Hello
Hello

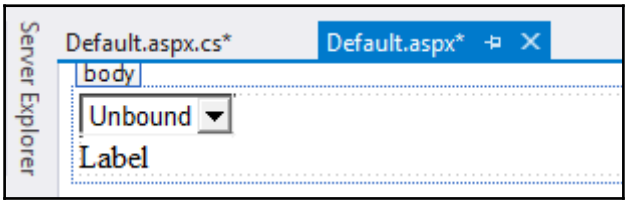

localhost:50641/Default.a
localhost:50641/Default.aspx
Hello
o

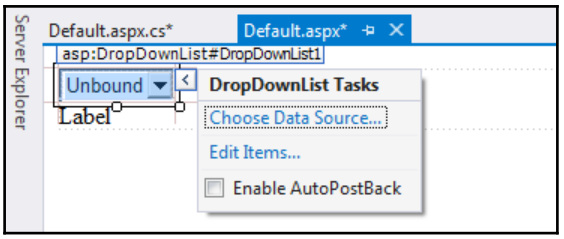
Chapter 17: Examining Multiple Variable Values with Switch Blocks

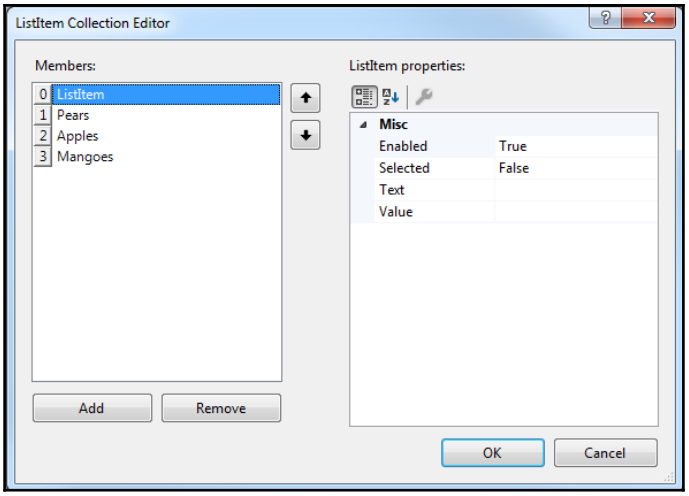


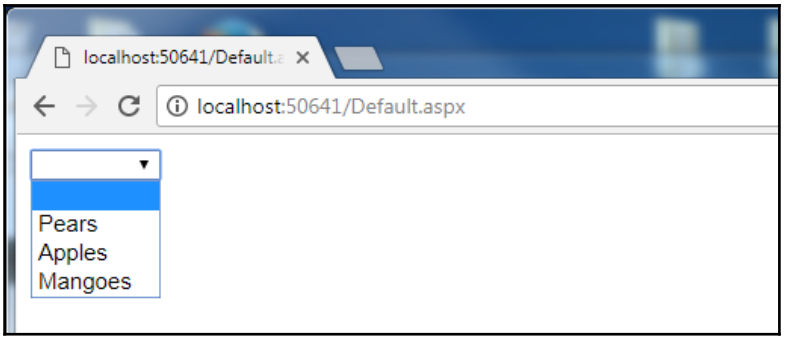



```
Default.aspx.cs*   Default.aspx*
 1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
 2
 3  <!DOCTYPE html>
 4
 5  <html xmlns="http://www.w3.org/1999/xhtml">
 6  <head runat="server">
 7      <title></title>
 8  </head>
 9  <body>
10      <form id="form1" runat="server">
11          <asp:DropDownList ID="DropDownList1" runat="server"></asp:DropDownList>
12          <asp:Label ID="Label1" runat="server" Text="Label"></asp:Label>
13      </form>
14  </body>
15  </html>
16
```





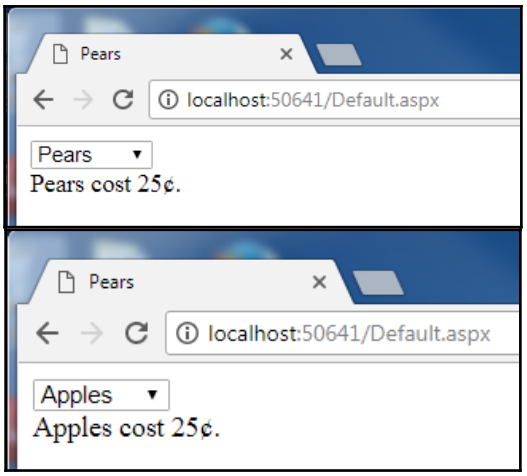




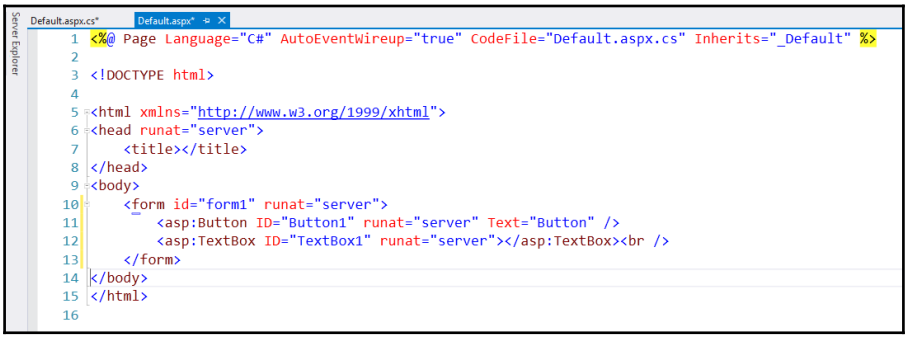

```
case "Pears":
    Page.T
    Label1
    break;
```

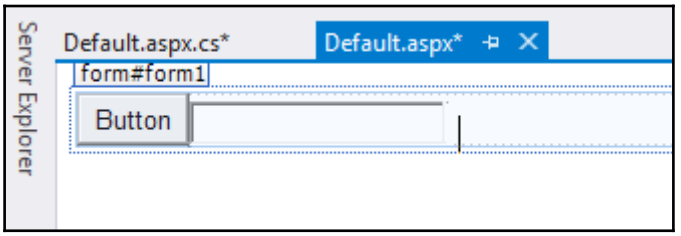
class System.String
Represents text as a sequence of UTF-16 code units.To browse the .NET Framework source code for this type, see the Reference Source.

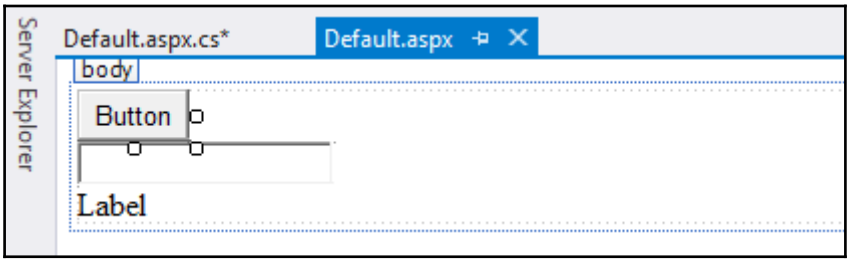
The switch statement contains multiple cases with the label value '"Pears"'

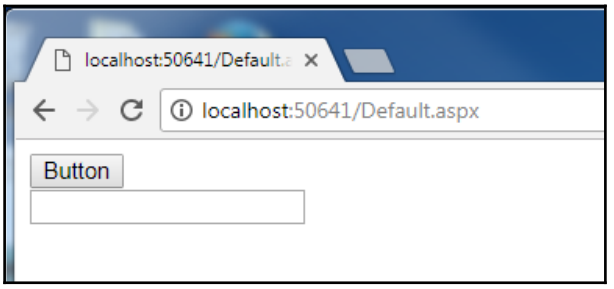

Pears
localhost:50641/Default.aspx
Pears
Pears cost 25¢.
Pears
localhost:50641/Default.aspx
Apples
Apples cost 25¢.

Chapter 18: Improving Input Processing with TryParse









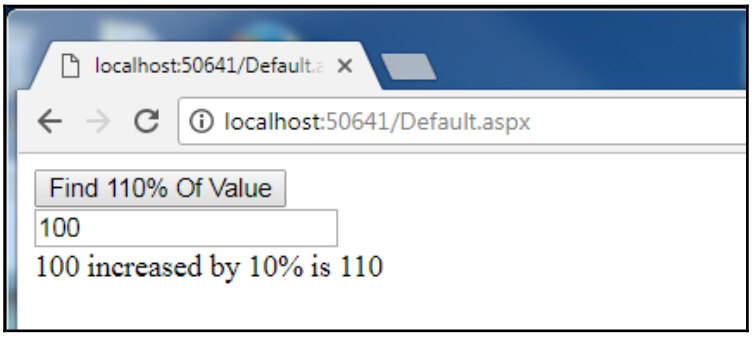
```
bool double.TryParse(string s, out double result) (+ 1 overload)
Converts the string representation of a number to its double-precision floating-point number equivalent. A return value indicates whether the conversion succeeded or failed.

Cannot convert method group 'TryParse' to non-delegate type 'bool'. Did you intend to invoke the method?
```

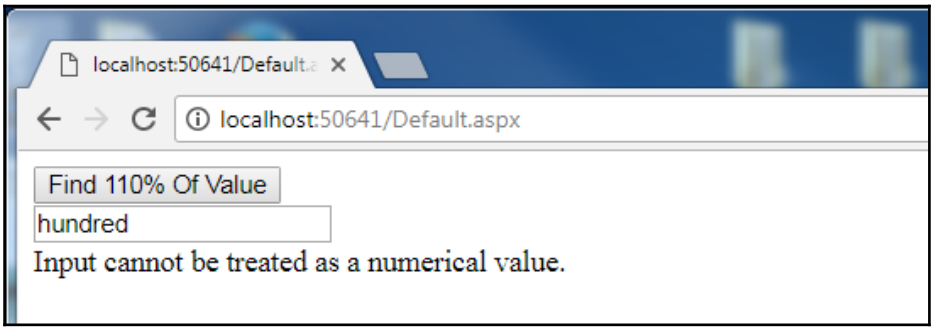
```
if (double.TryParse(TextBox1.Text, out xOut))//8. Line below says: take text
//9. If "ten", this cannot be c
```

```
string System.Web.UI.WebControls.TextBox.Text { get; set; }
Gets or sets the text content of the System.Web.UI.WebControls.TextBox control.
```

```
TryParse(TextBox1.Text, out xOut))//8. Line below says: take text from box, and if possible, convert
n",
```

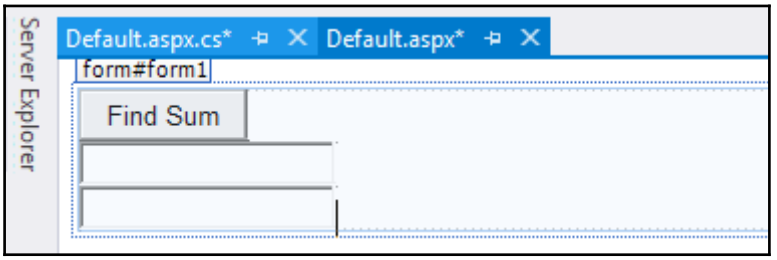
```
bool double.TryParse(string s, out double result) (+ 1 overload)
Converts the string representation of a number to its double-precision floating-point number equivalent. A return value indicates whether the conversion succeeded or failed.
```

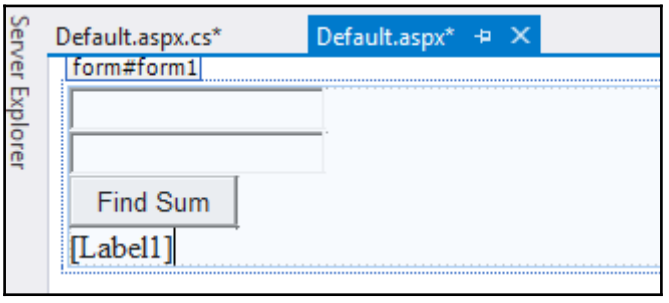




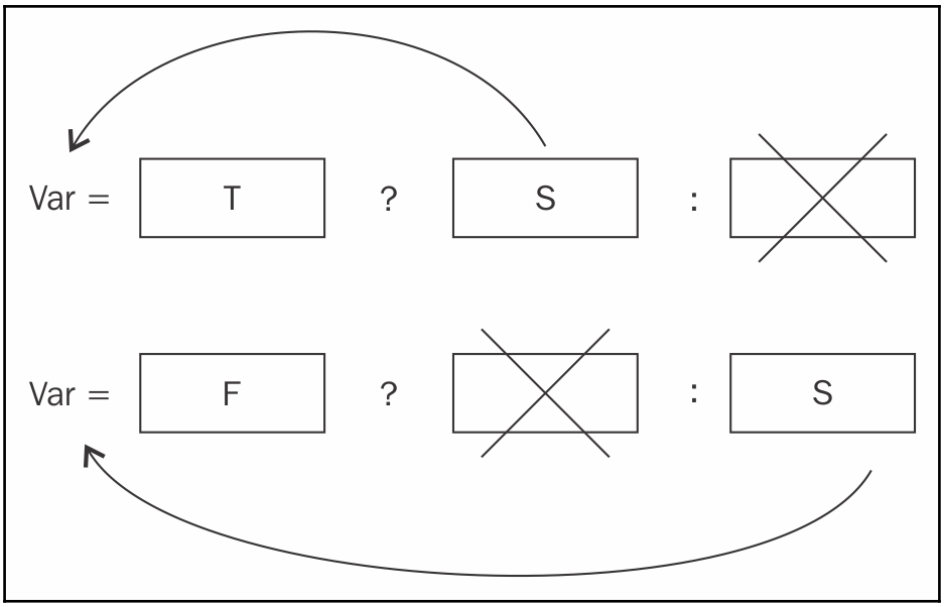
Chapter 19: Replacing If/Else Blocks with the Ternary Operator

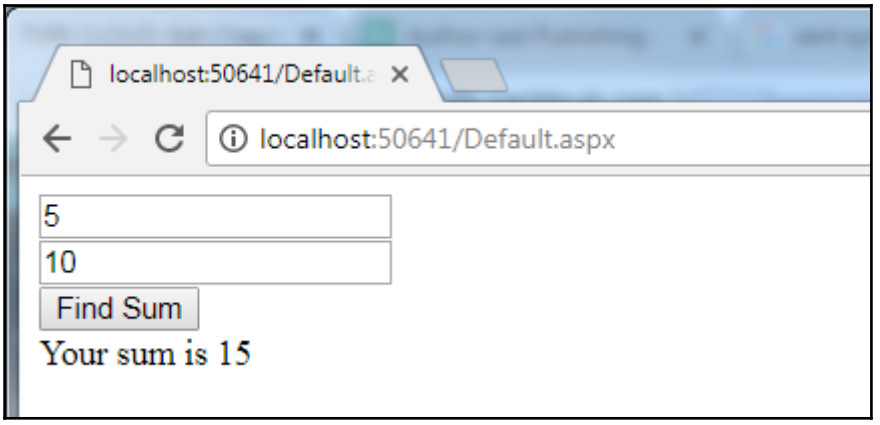
```
Default.aspx.cs*   Default.aspx*
 1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
 2
 3  <!DOCTYPE html>
 4
 5  <html xmlns="http://www.w3.org/1999/xhtml">
 6  <head runat="server">
 7      <title></title>
 8  </head>
 9  <body>
10      <form id="form1" runat="server">
11          <asp:Button ID="Button1" runat="server" Text="Button" OnClick="Button1_Click" /><br />
12          <asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
13          <asp:TextBox ID="TextBox2" runat="server"></asp:TextBox>
14      </form>
15  </body>
16  </html>
17
```



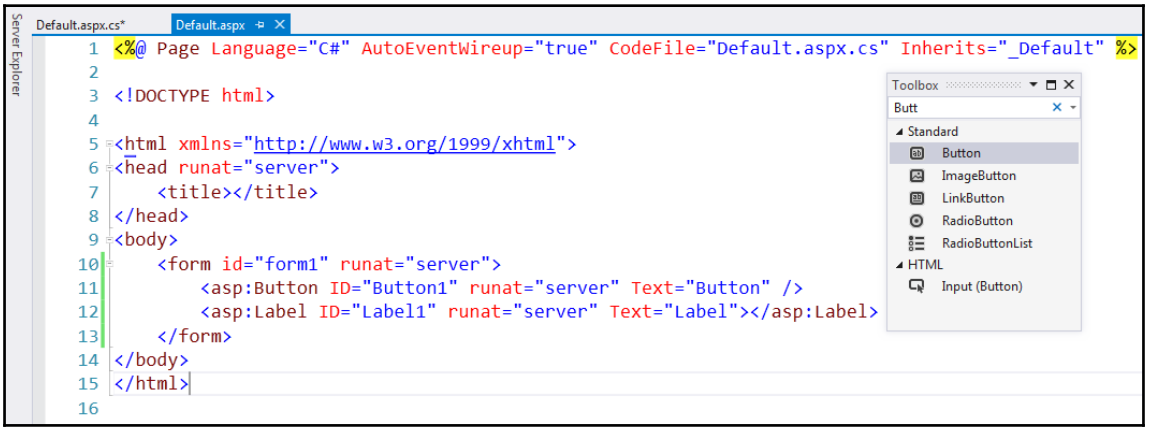


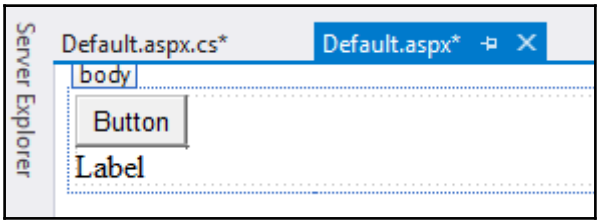

```
bool double.TryParse(string s, out double result) (+ 1 overload)
Converts the string representation of a number to its double-precision floating-point number equivalent. A return value indicates whether the conversion succeeded or failed.
```

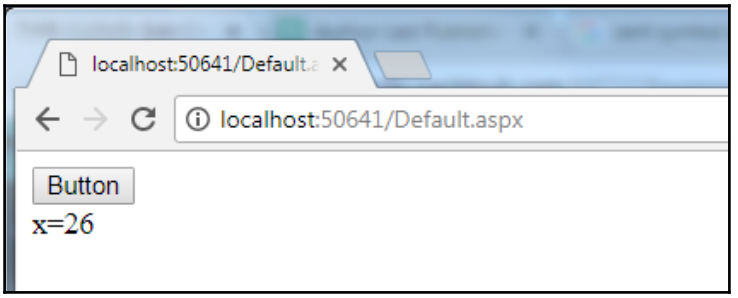

Var =
T
?
S
:
Var =
F
?
:
S

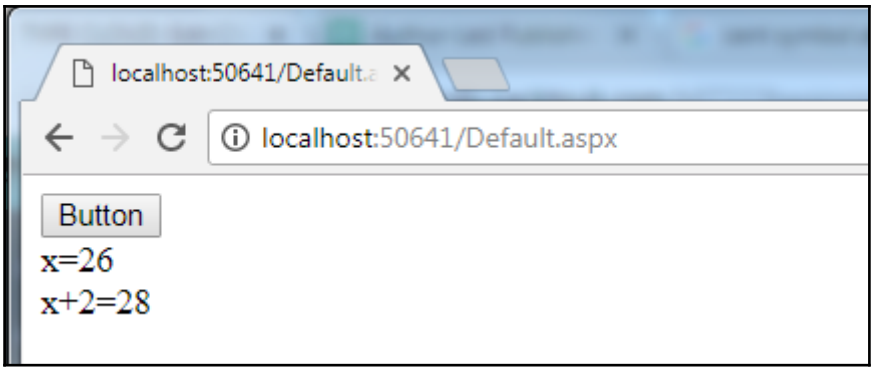

localhost:50641/Default.a
localhost:50641/Default.aspx
5
10
Find Sum
Your sum is 15

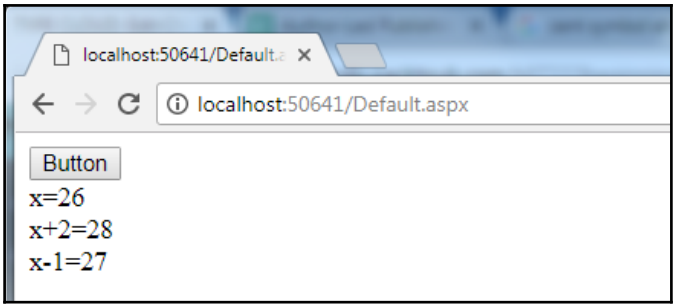
Chapter 20: Operators That Evaluate and Assign in Place

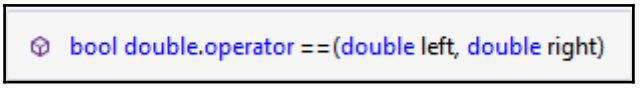


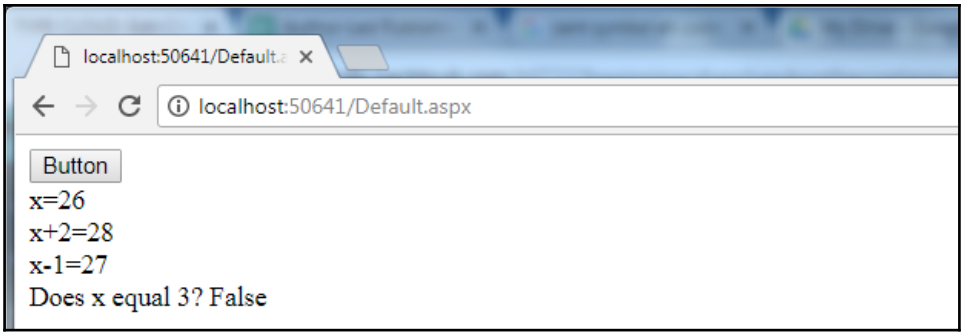





localhost:50641/Default.a
localhost:50641/Default.aspx
Button
x=26
x+2=28

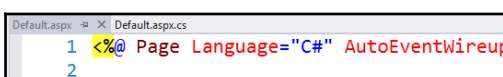

localhost:50641/Default.a
localhost:50641/Default.aspx
Button
x=26
x+2=28
x-1=27

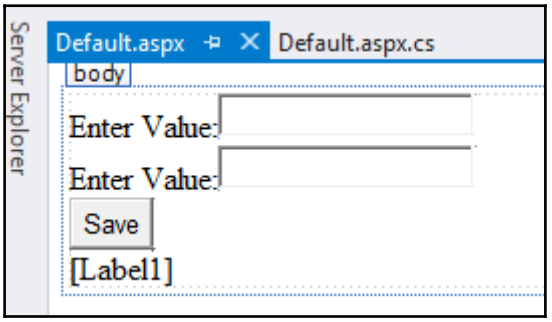

bool double.operator ==(double left, double right)

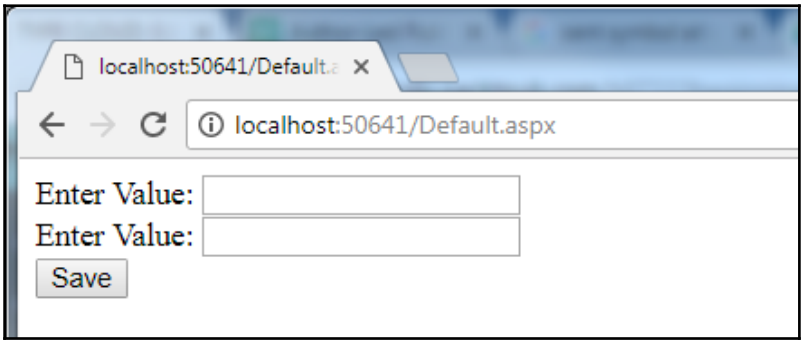

localhost:50641/Default.a
localhost:50641/Default.aspx
Button
x=26
x+2=28
x-1=27
Does x equal 3? False

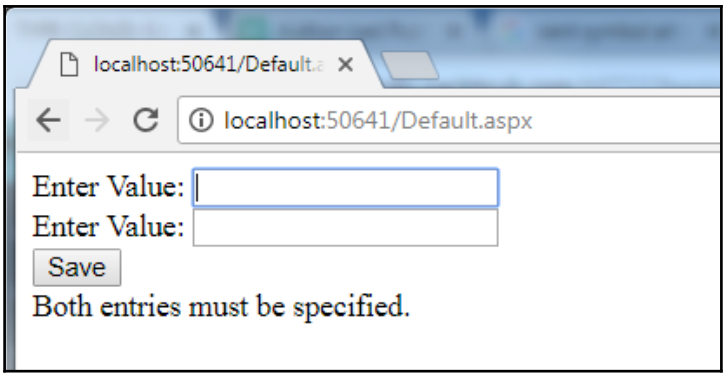
Chapter 21: Checking Two Conditions with the Logical AND Operator

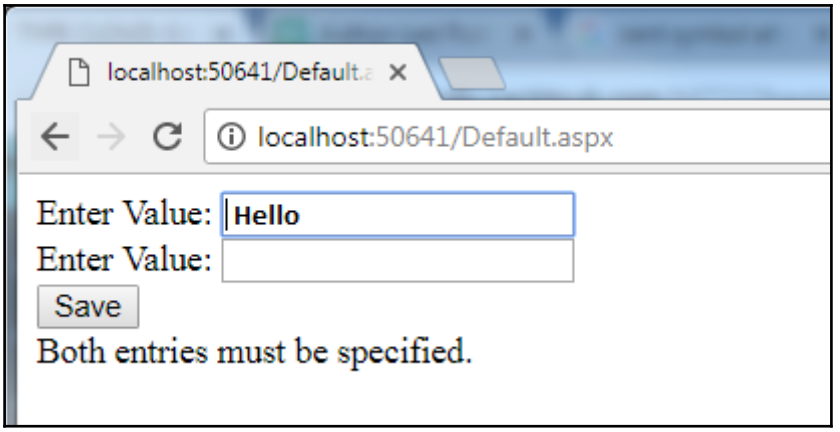
```
Default.aspx  Default.aspx.cs
 1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
 2
 3  <!DOCTYPE html>
 4
 5  <html xmlns="http://www.w3.org/1999/xhtml">
 6  <head runat="server">
 7      <title></title>
 8  </head>
 9  <body>
10      <form id="form1" runat="server">
11          Enter Value:<asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
12          Enter Value:<asp:TextBox ID="TextBox2" runat="server"></asp:TextBox><br />
13          <asp:Button ID="Button1" runat="server" Text="Save" OnClick="Button1_Click" /><br />
14          <asp:Label ID="sampLabel" runat="server" Text=""></asp:Label>
15      </form>
16  </body>
17  </html>
18
```

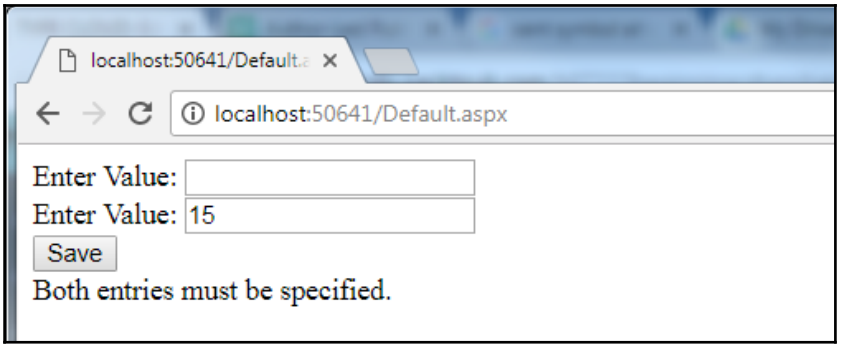


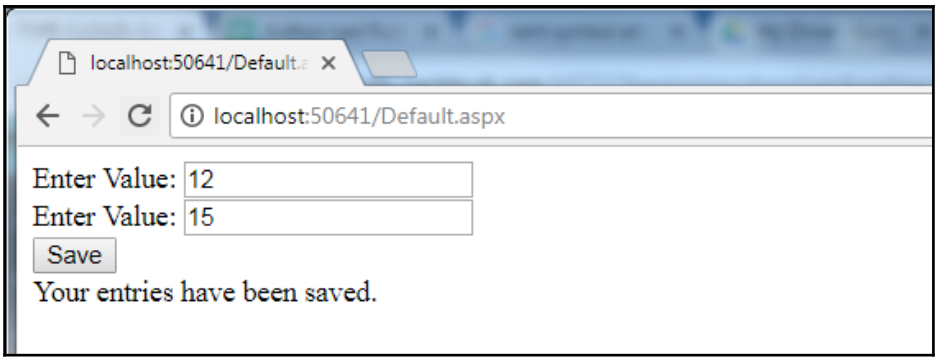




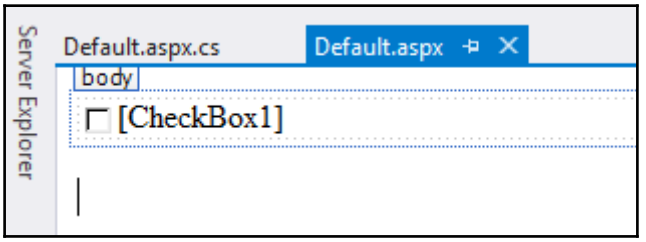

localhost:50641/Default.a
localhost:50641/Default.aspx
Enter Value:
Enter Value:
Save
Both entries must be specified.

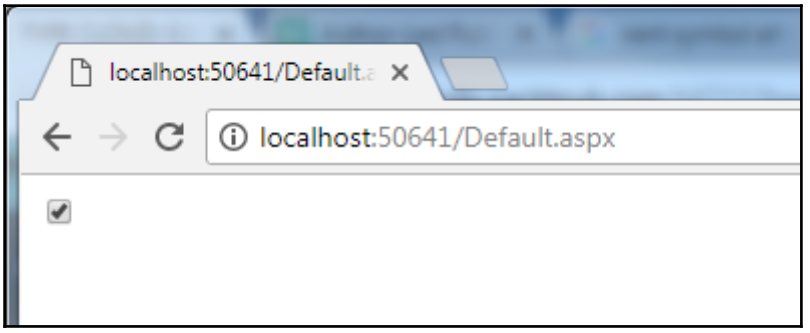

localhost:50641/Default.a
localhost:50641/Default.aspx
Enter Value: Hello
Enter Value:
Save
Both entries must be specified.

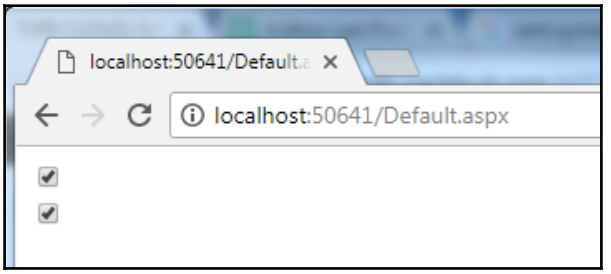

localhost:50641/Default.a
localhost:50641/Default.aspx
Enter Value:
Enter Value: 15
Save
Both entries must be specified.

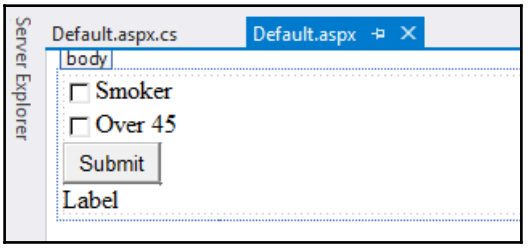

localhost:50641/Default.a
localhost:50641/Default.aspx
Enter Value: 12
Enter Value: 15
Save
Your entries have been saved.

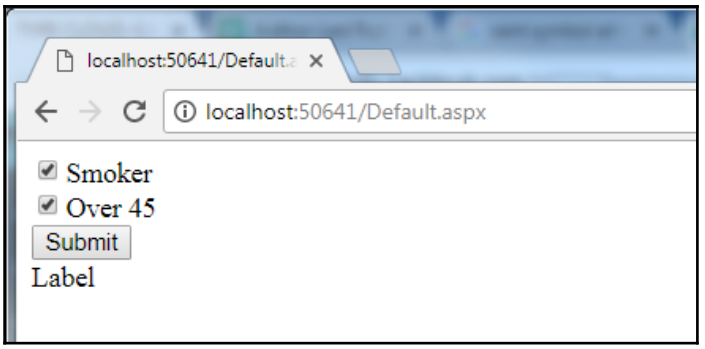
Chapter 22: Checking Two Conditions with the Logical OR Operator

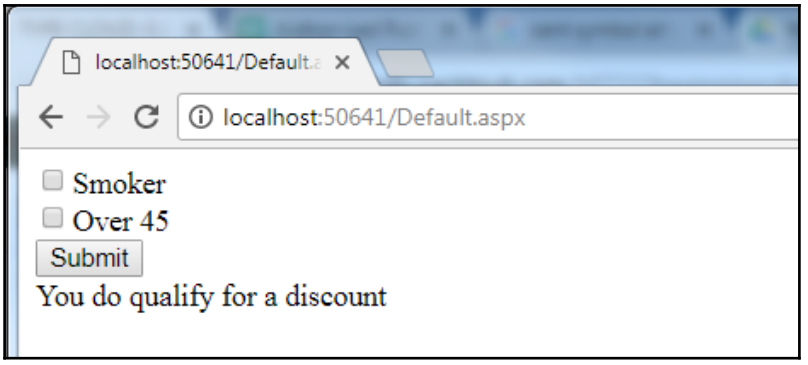


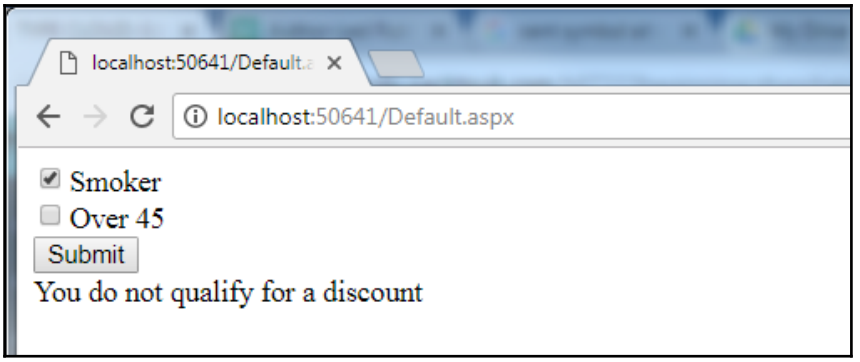


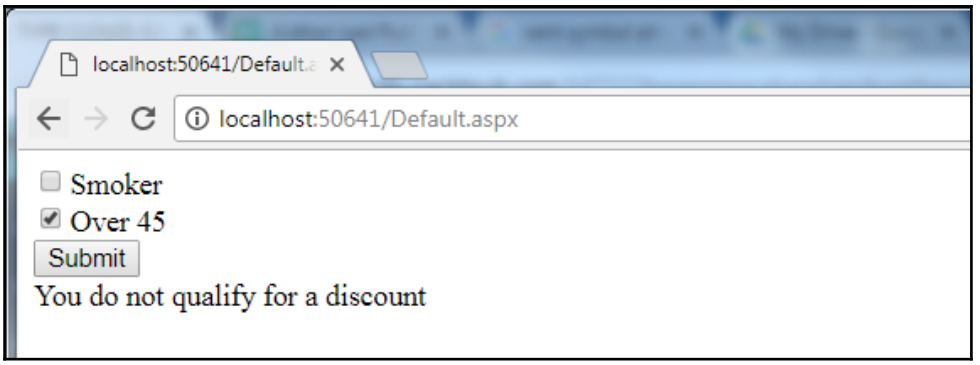


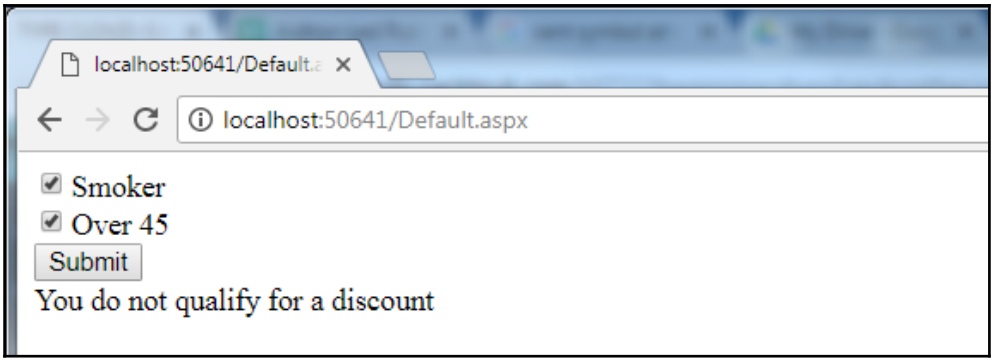



localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
Label

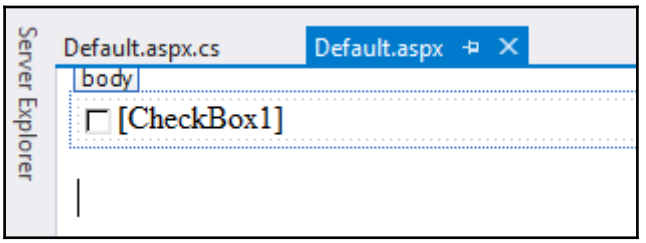

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do qualify for a discount

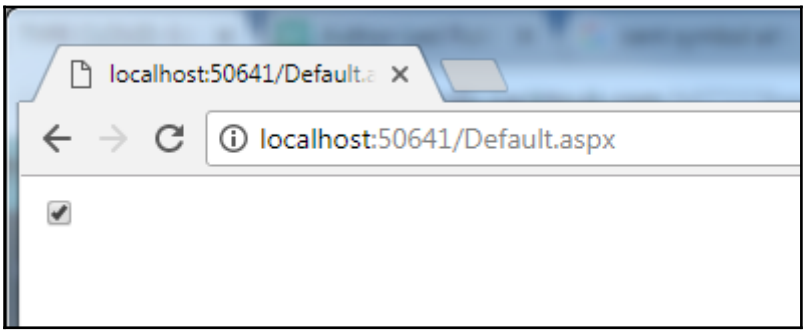

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do not qualify for a discount

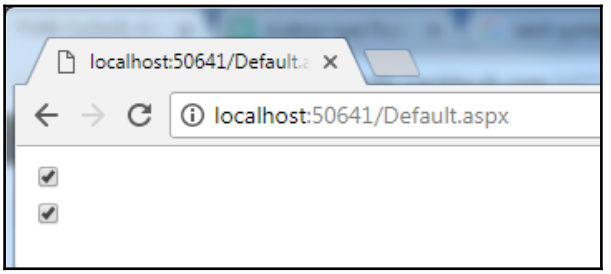

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do not qualify for a discount

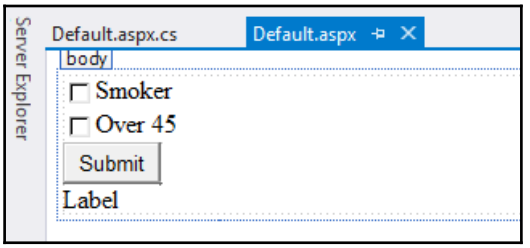

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do not qualify for a discount

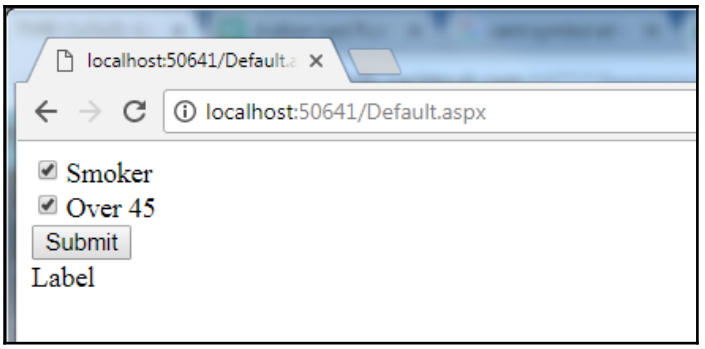
Chapter 23: Declaring, Setting, and Reading Arrays

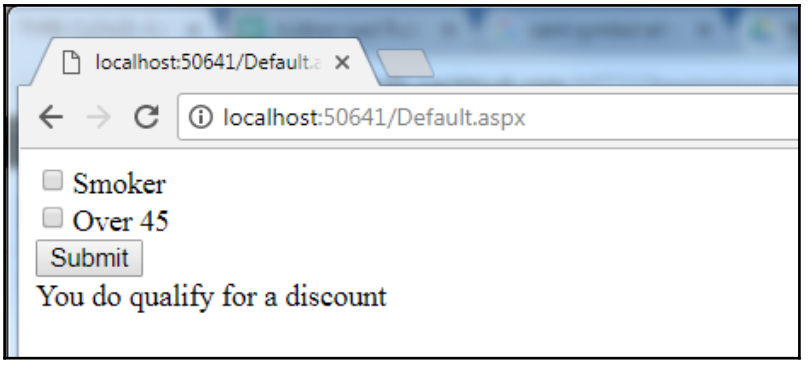


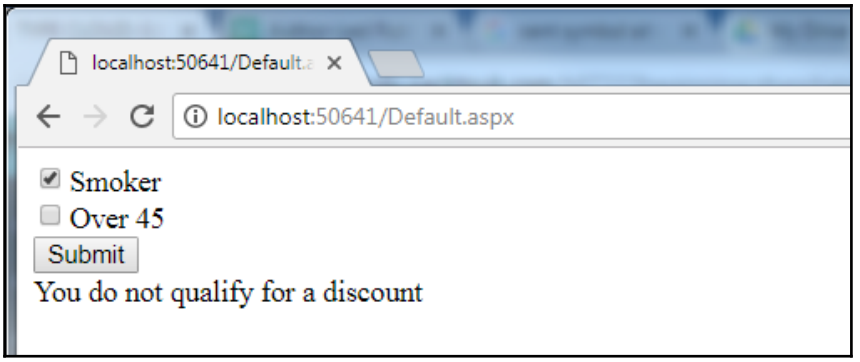


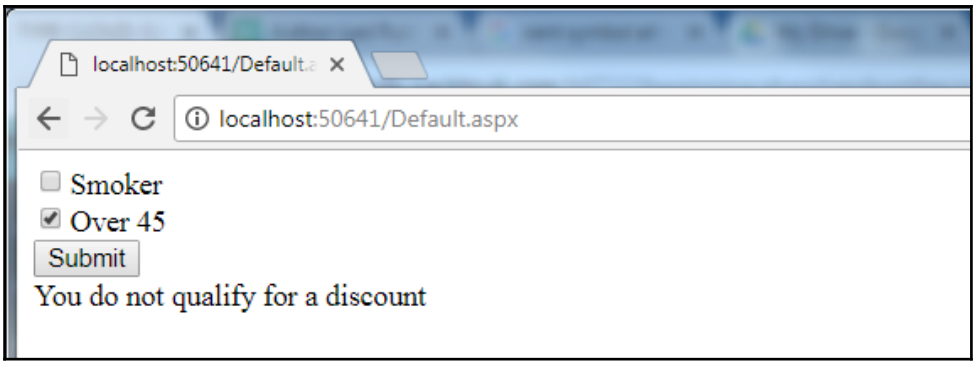


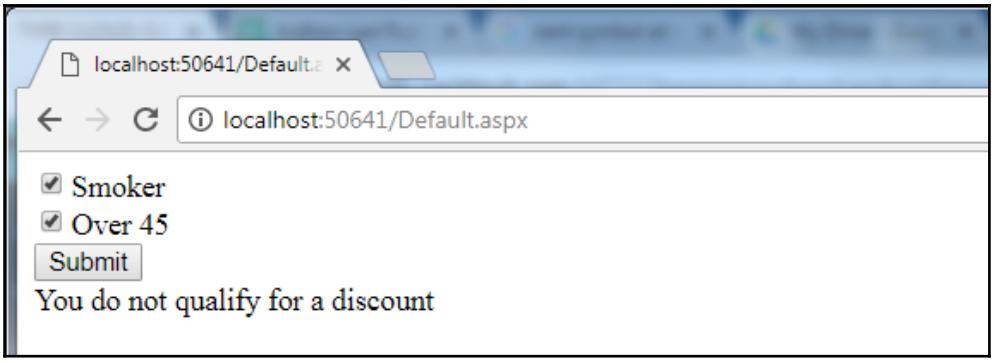



localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
Label

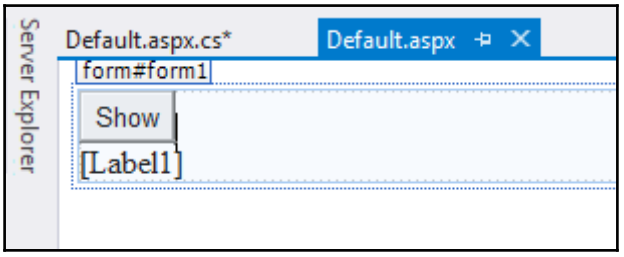

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do qualify for a discount

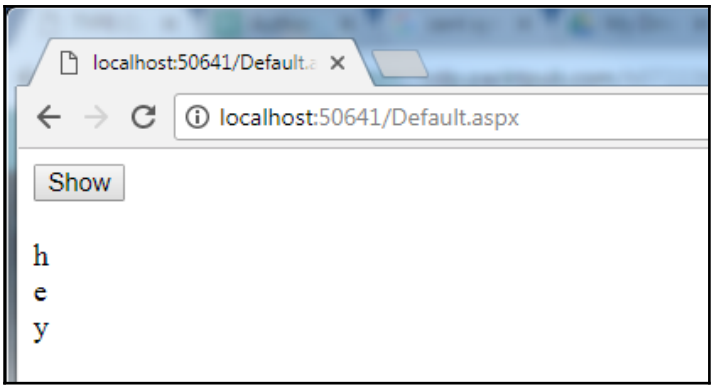

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do not qualify for a discount


localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do not qualify for a discount

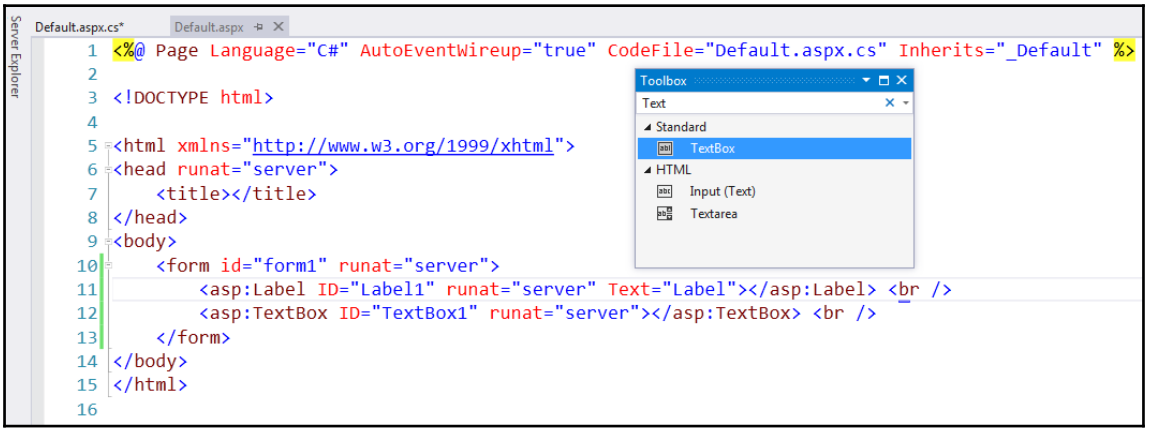

localhost:50641/Default.a
localhost:50641/Default.aspx
Smoker
Over 45
Submit
You do not qualify for a discount

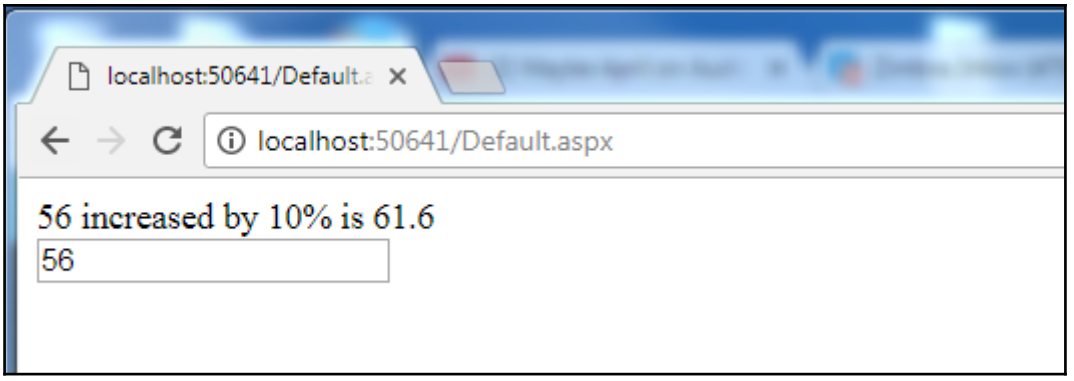
Chapter 24: Iterating Over Arrays with foreach and for Loops

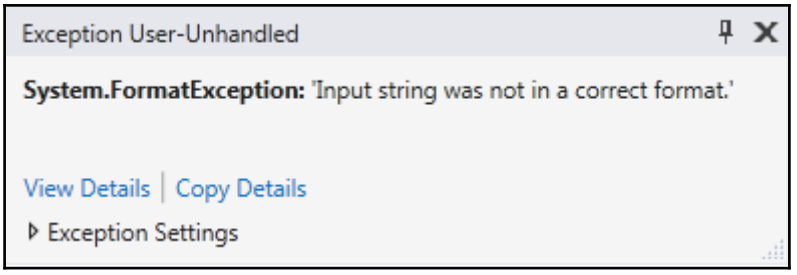



localhost:50641/Default.
localhost:50641/Default.aspx
Show
h
e
y

Chapter 25: Creating and Using a Simple Method

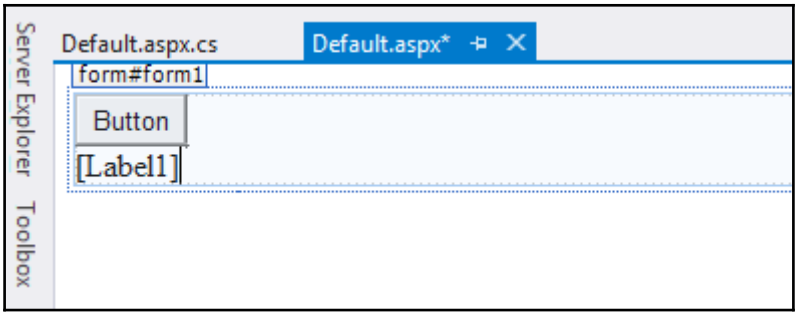


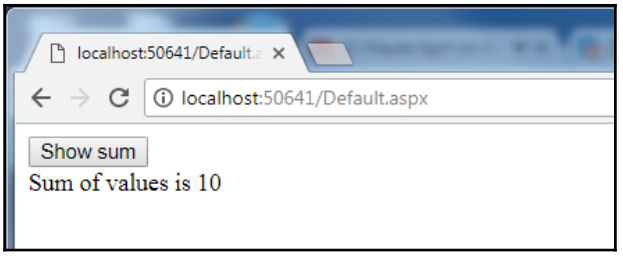




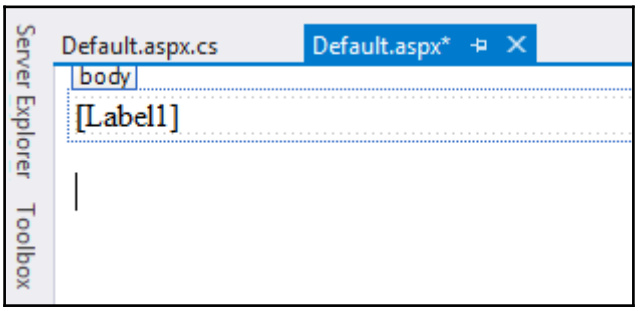
Chapter 26: Passing Arrays into Methods

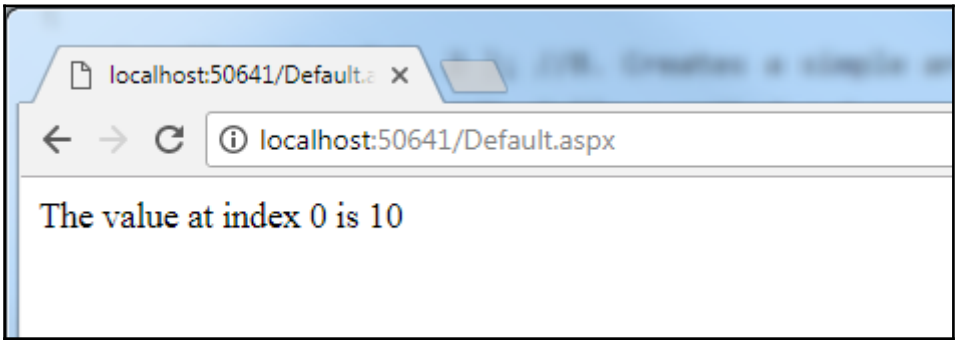
```
Default.aspx.cs   Default.aspx*
 1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
 2
 3  <!DOCTYPE html>
 4
 5  <html xmlns="http://www.w3.org/1999/xhtml">
 6  <head runat="server">
 7      <title></title>
 8  </head>
 9  <body>
10      <form id="form1" runat="server">
11          <asp:Button ID="Button1" runat="server" Text="Button" /> <br />
12          <asp:Label ID="Label1" runat="server" Text=""></asp:Label>
13      </form>
14  </body>
15  </html>
16
```

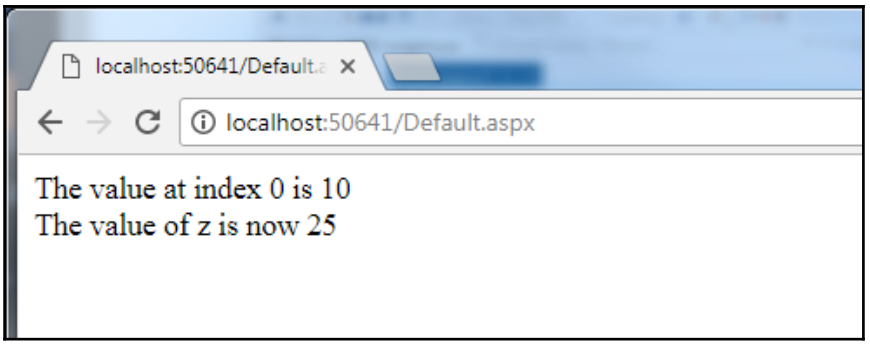




Chapter 27: Reference Type and Value Type Variables

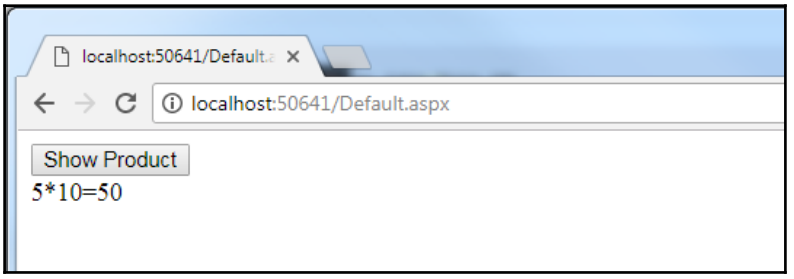


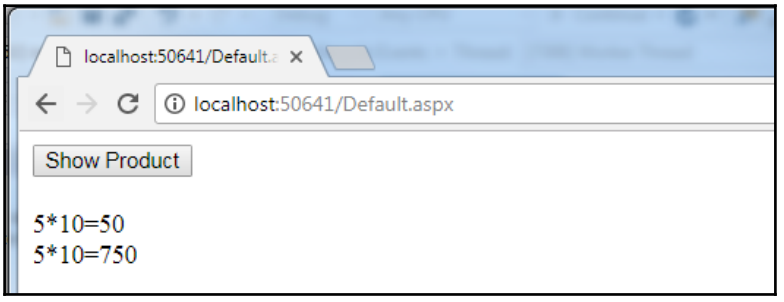



localhost:50641/Default.a
localhost:50641/Default.aspx
The value at index 0 is 10
The value of z is now 25

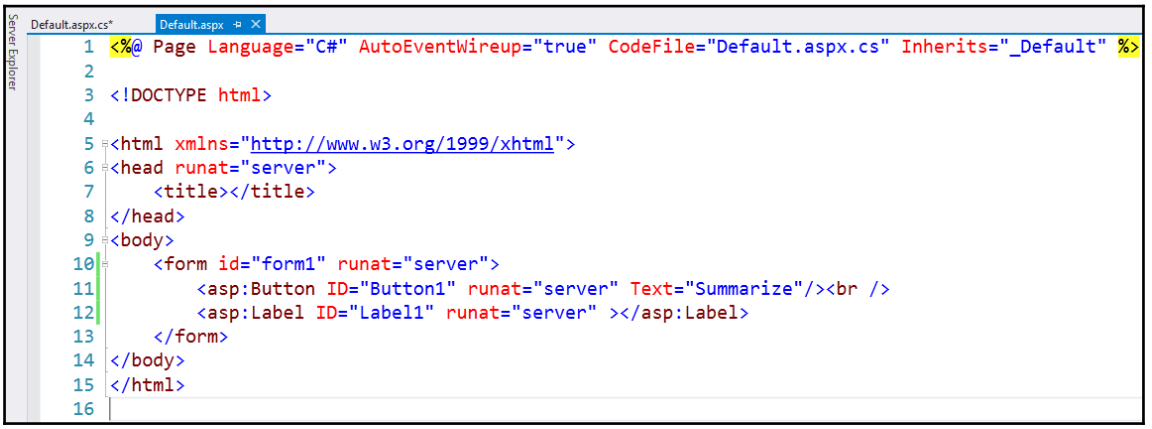
Chapter 28: Creating More Flexible Methods with the params Keyword

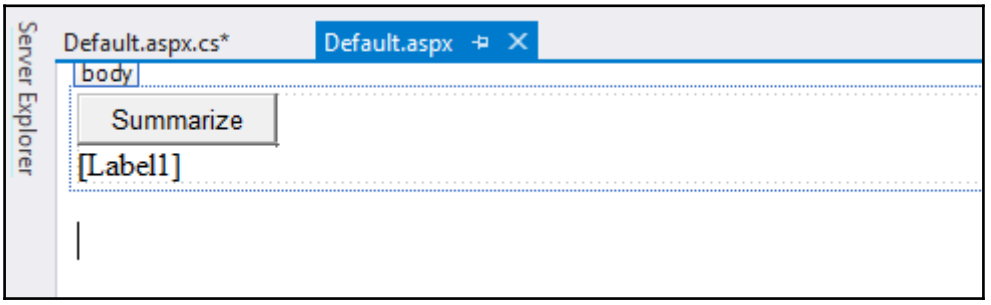
```aspx
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
        <asp:Button ID="Button1" runat="server" Text="Show Product" />
        <asp:Label ID="Label1" runat="server" Text="Label"></asp:Label>
    </form>
</body>
</html>
```

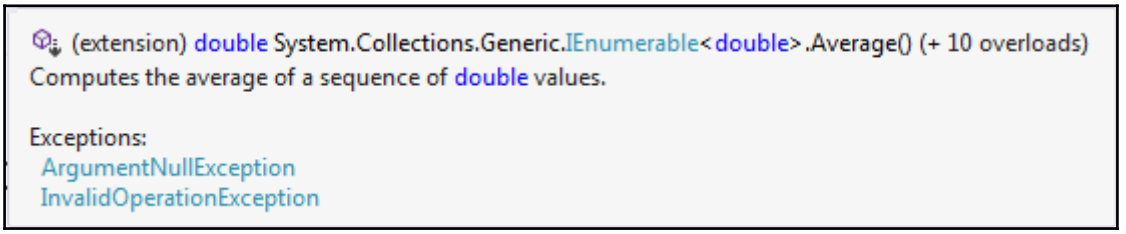


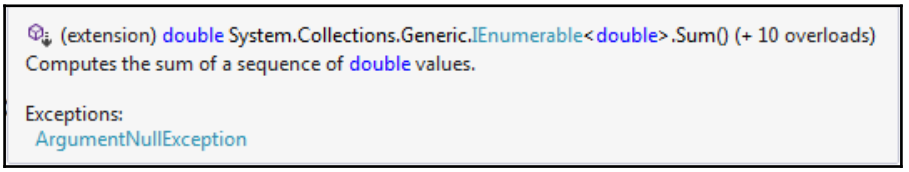


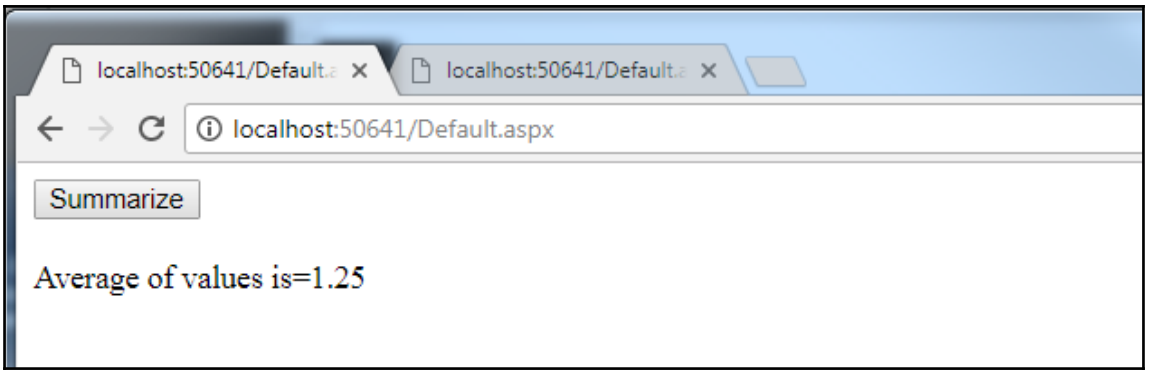
Chapter 29: Creating More Flexible Functions with the out Keyword

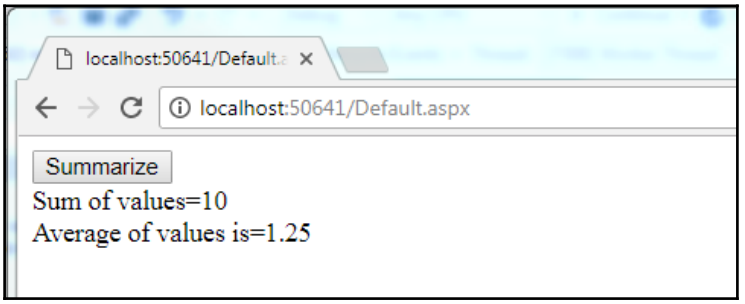




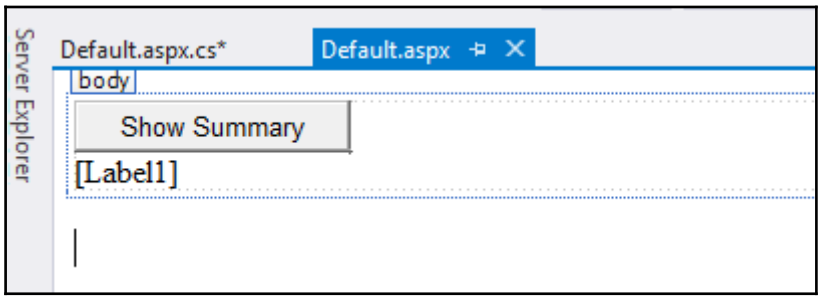


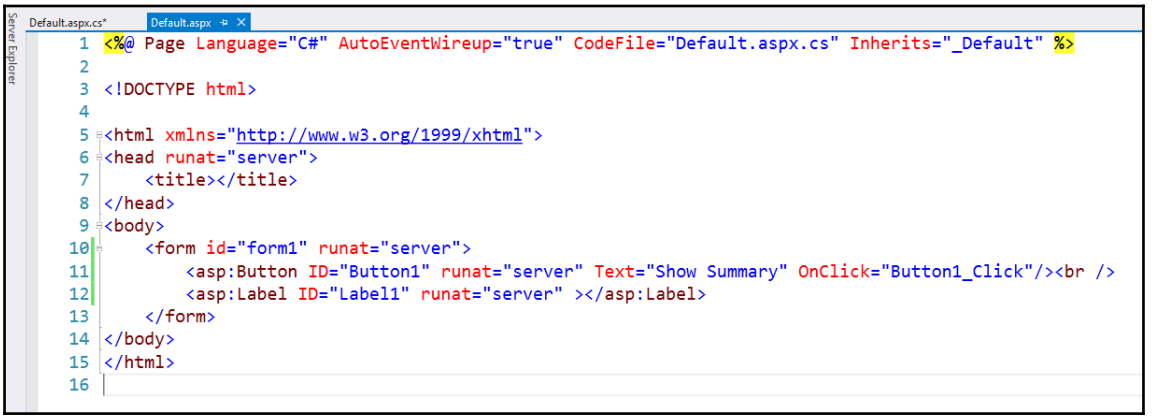


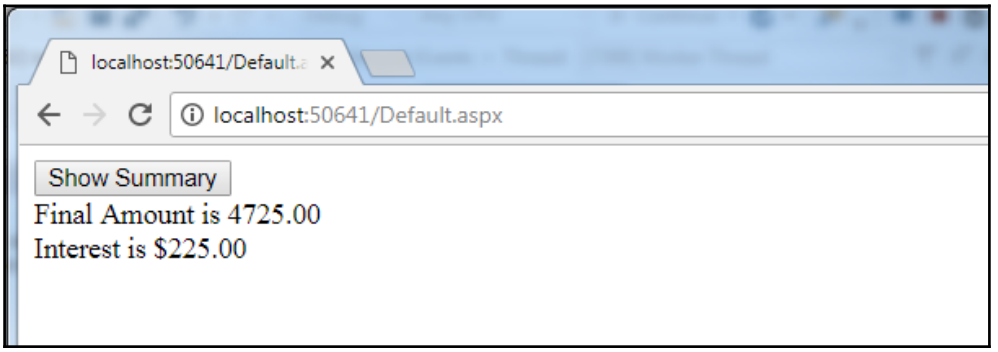

localhost:50641/Default.a
localhost:50641/Default.a
localhost:50641/Default.aspx
Summarize
Average of values is=1.25


localhost:50641/Default.a
localhost:50641/Default.aspx
Summarize
Sum of values=10
Average of values is=1.25

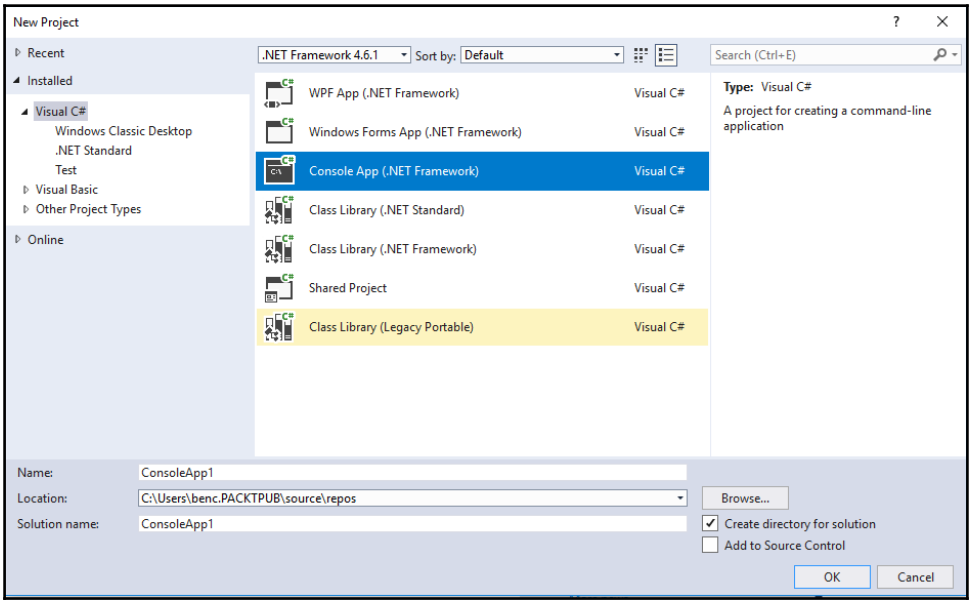
Chapter 30: Combining the ref and out Keywords to Write Flexible Functions

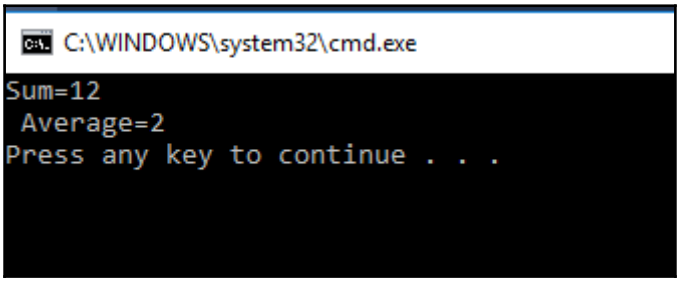




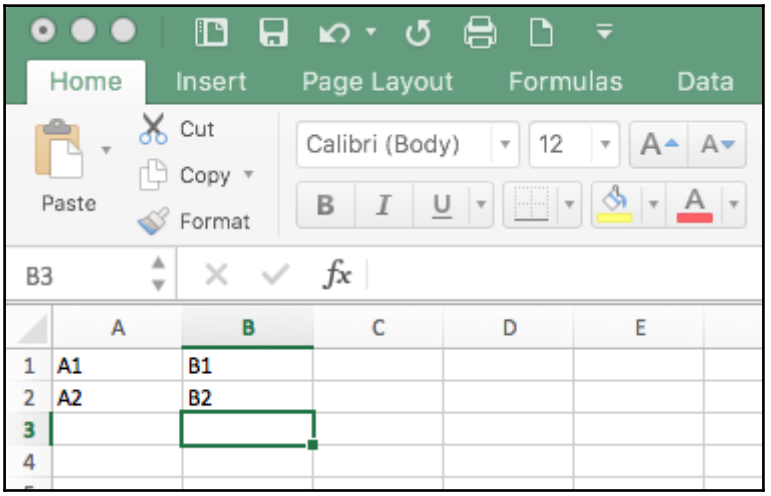


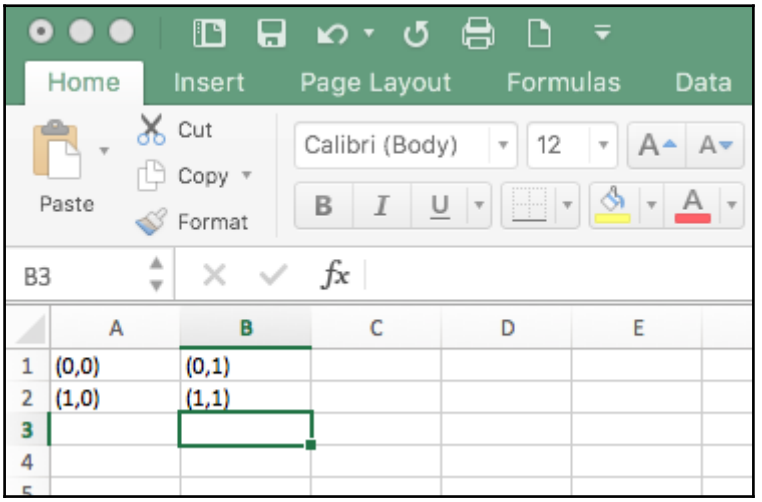
Chapter 31: The out keyword in C# 7



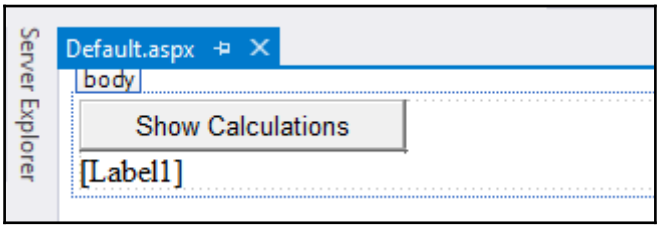


Chapter 32: Multidimensional Arrays





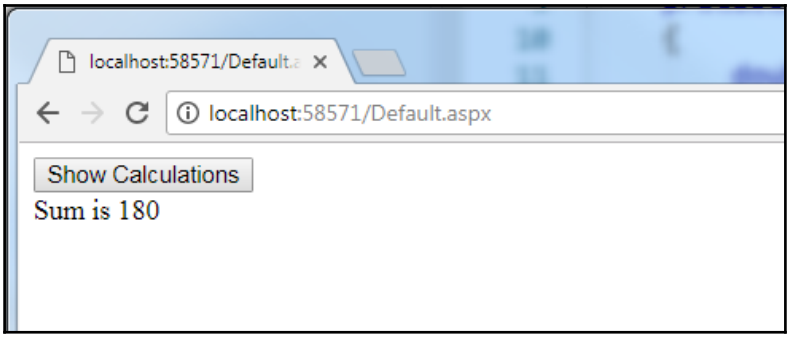
```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
        <asp:Button ID="Button1" runat="server" Text="Show Calculations" OnClick="Button1_Click" /><br />
        <asp:Label ID="sampLabel" runat="server"></asp:Label>
    </form>
</body>
</html>


```



struct System.Int32

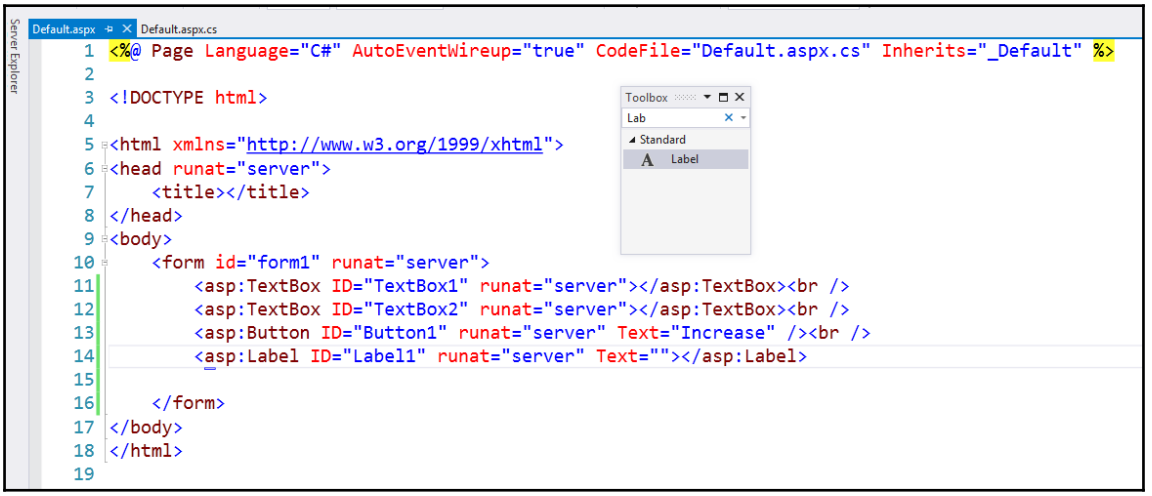
Represents a 32-bit signed integer.To browse the .NET Framework source code for this type, see the Reference Source.

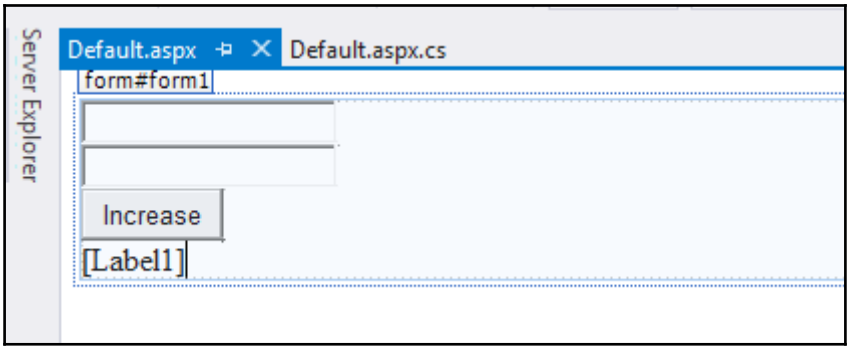
Only assignment, call, increment, decrement, and new object expressions can be used as a statement

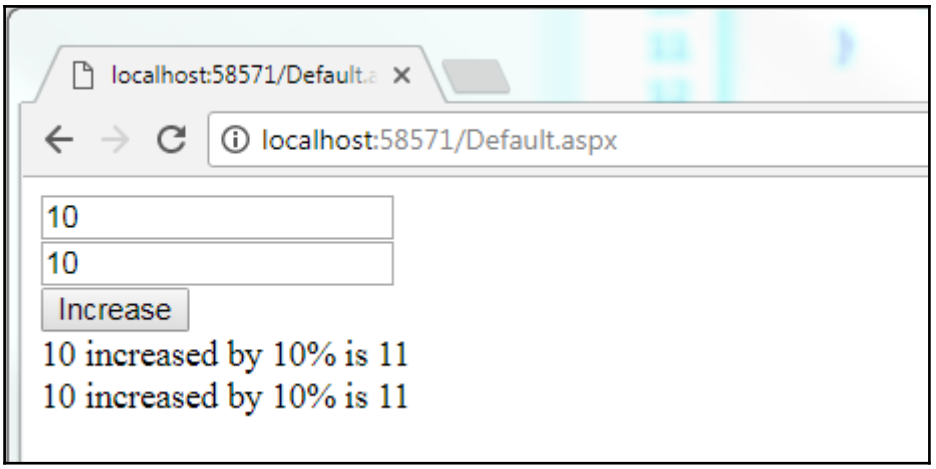


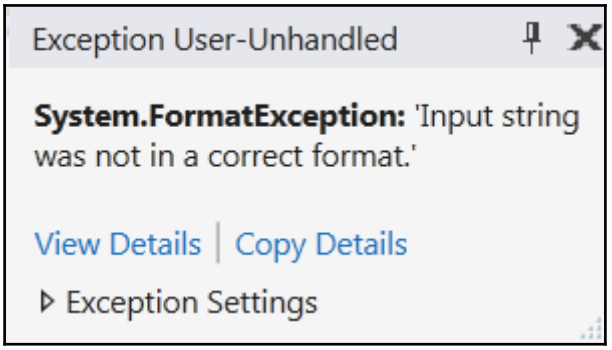

localhost:58571/Default.a
localhost:58571/Default.aspx
Show Calculations
Sum is 180
The value at index (0,1) formatted as currency is $34.00

Chapter 33: Writing Easier Code with the Var and Dynamic Keywords



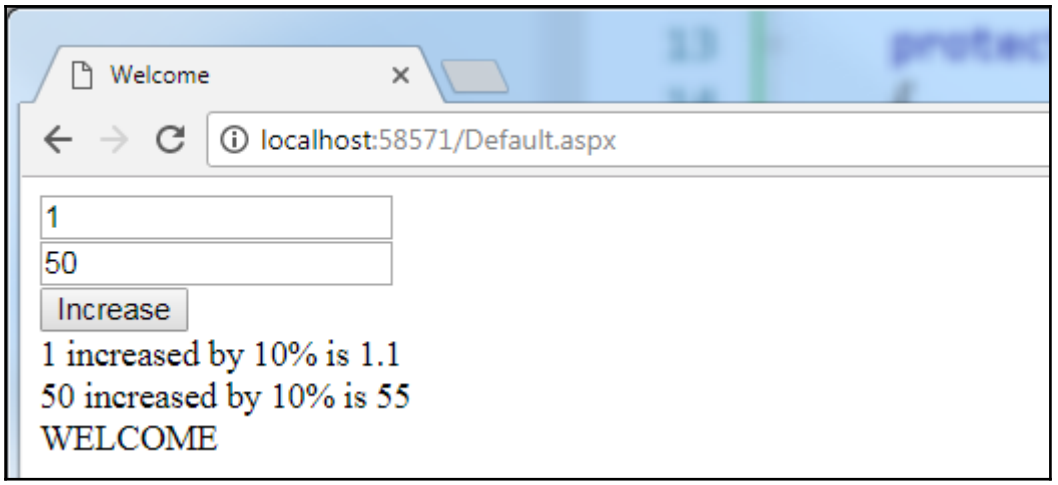




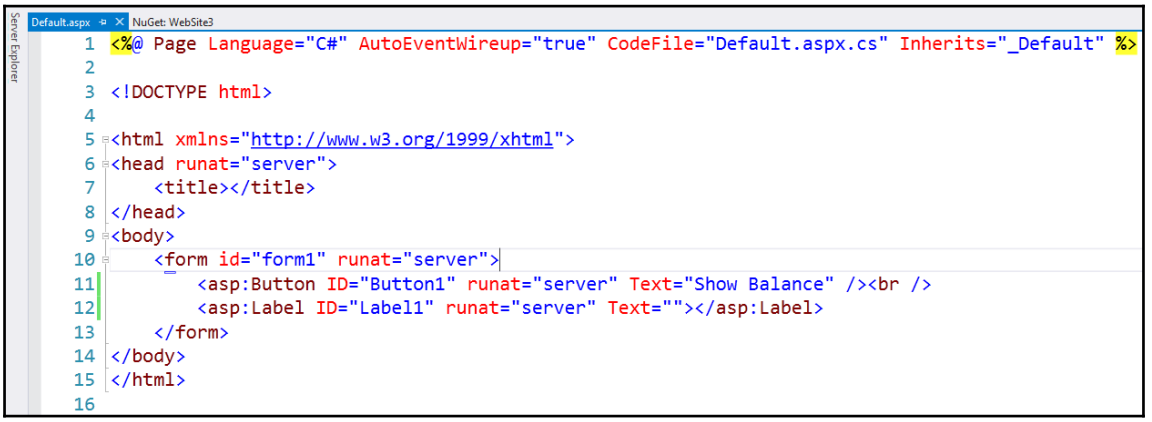


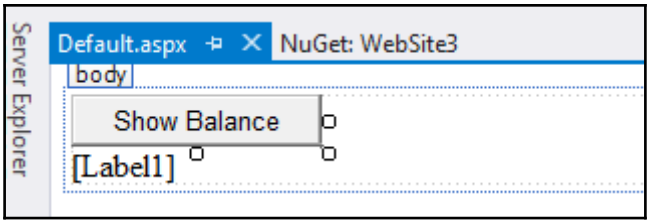

```
struct System.Int32
Represents a 32-bit signed integer.To browse the .NET Framework source code for this type, see the Reference Source.

Cannot implicitly convert type 'int' to 'string'
```

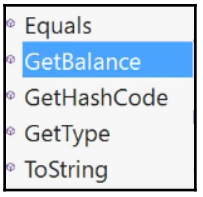
```
char char.ToUpper(char c, System.Globalization.CultureInfo culture) (+ 1 overload)
Converts the value of a specified Unicode character to its uppercase equivalent using specified culture-specific formatting information.

Exceptions:
  ArgumentNullException

No overload for method 'ToUpper' takes 0 arguments
```

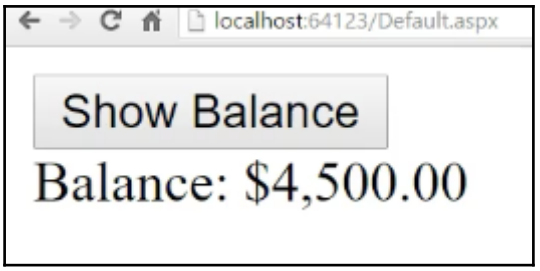

Welcome
localhost:58571/Default.aspx
1
50
Increase
1 increased by 10% is 1.1
50 increased by 10% is 55
WELCOME

Chapter 34: Creating a Class with a Constructor and a Function

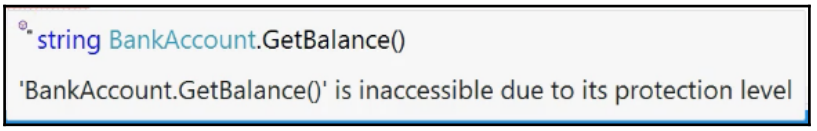


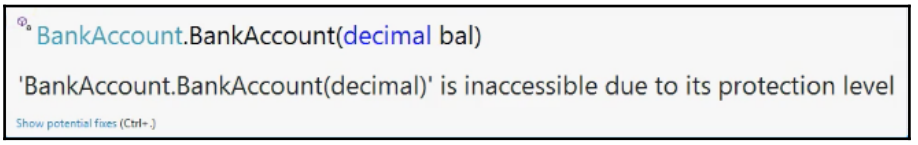






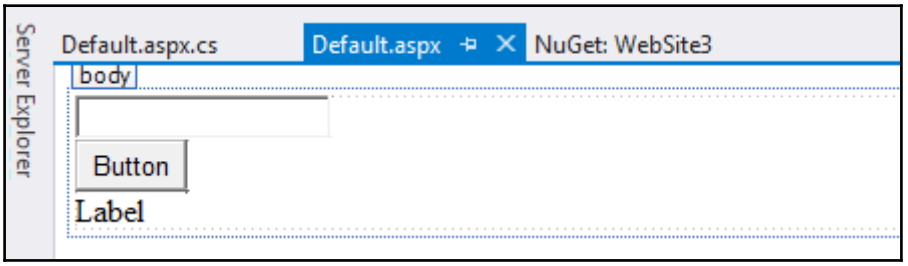

```
14
15          <input type="submit" name="Button1" value="Show Balance" id="Button1" /><br />
16          <span id="Label1">Balance: $4,500.00</span>
17
```





Chapter 35: Creating a Class with a Static Method

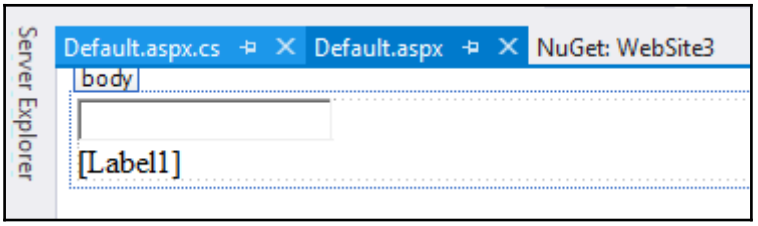
```aspx
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
        <asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
        <asp:Button ID="Button1" runat="server" Text="Button" /><br />
        <asp:Label ID="Label1" runat="server" Text="Label"></asp:Label>
    </form>
</body>
</html>
```



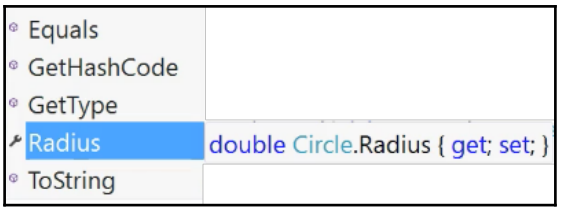

```
char[] string.ToCharArray() (+ 1 overload)
Copies the characters in this instance to a Unicode character array.
```

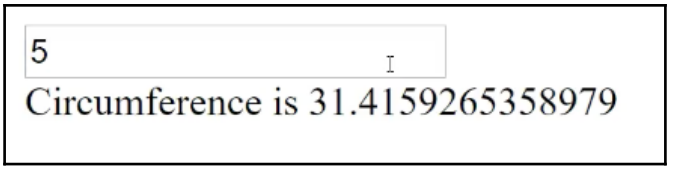
Chapter 36: Creating a Class with an Object Property

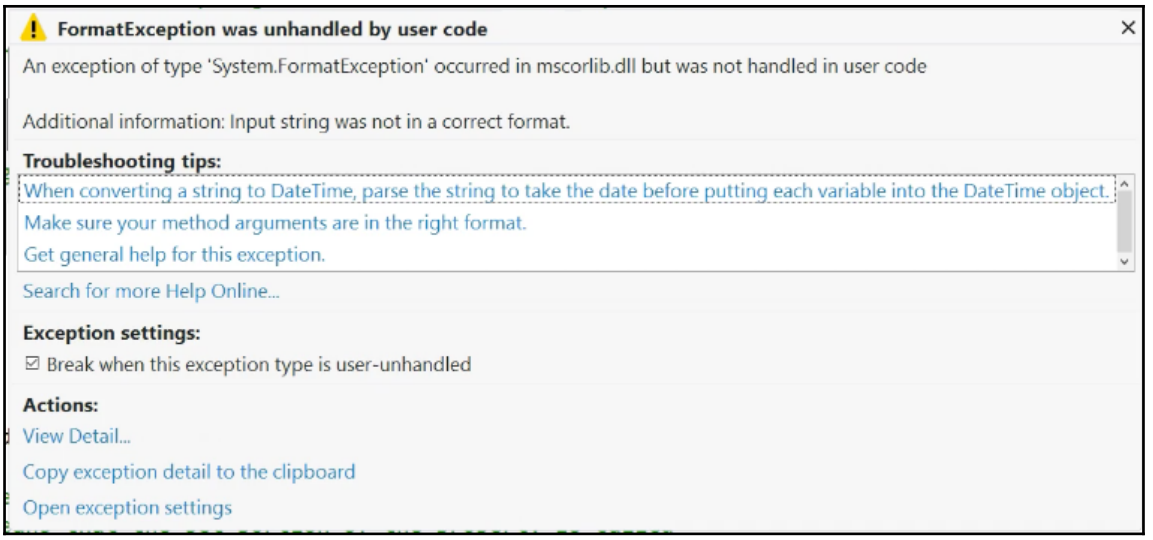
```aspx
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title></title>
</head>
<body>
    <form id="form1" runat="server">
        <asp:TextBox ID="TextBox1" runat="server" OnTextChanged="TextBox1_TextChanged"></asp:TextBox><br />
        <asp:Label ID="Label1" runat="server"></asp:Label>
    </form>
</body>
</html>

```




```aspx.cs
//1. using is a keyword, it's blue
//2. System is a name space that stores already created code
//3. using System brings in existing code
using System;

public partial class _Default : System.Web.UI.Page
{



    protected void TextBox1_TextChanged(object sender, EventArgs e)
    {

    }
}
```

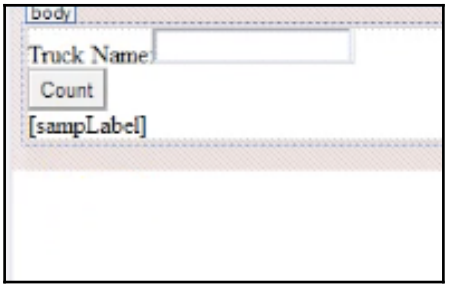

Equals
GetHashCode
GetType
Radius
double Circle.Radius { get; set; }
ToString


5
Circumference is 31.4159265358979


FormatException was unhandled by user code
An exception of type 'System.FormatException' occurred in mscorlib.dll but was not handled in user code
Additional information: Input string was not in a correct format.
Troubleshooting tips:
When converting a string to DateTime, parse the string to take the date before putting each variable into the DateTime object.
Make sure your method arguments are in the right format.
Get general help for this exception.
Search for more Help Online...
Exception settings:
Break when this exception type is user-unhandled
Actions:
View Detail...
Copy exception detail to the clipboard
Open exception settings

Chapter 37: Creating a Class with Static Fields, Functions, and Properties

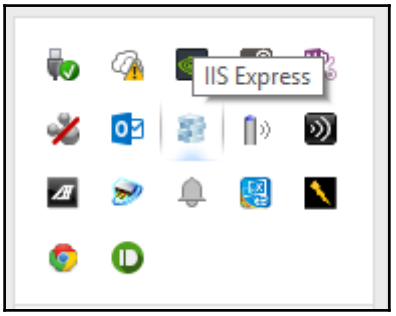
```
1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs"
Inherits="_Default" %>
2
3 <!DOCTYPE html>
4
5 <html xmlns="http://www.w3.org/1999/xhtml">
6 <head runat="server">
7      <title>Our First Page</title>
8 </head>
9 <body>
10    <form id="form1" runat="server">
11    Truck Name: <asp: TextBox ID="TextBox1" runat="server">< /asp:TextBox><br
/>
12     <asp:Button ID="Button1" runat="server" Text="Count" /<br />
13
14           <asp:Label ID="sampLabel" runat="server" </asp:Label>
15
16
17    </form>
18 </body>
19 </html>
20
```

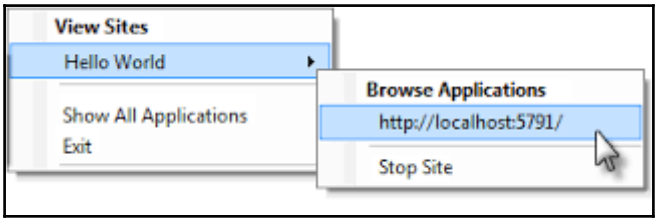


```
 6 /// <summary>
 7 /// Summary description for Truck
 8 /// </summary>
 9 public class Truck
10 {
11
12     public Truck(string name)
13     {
14
15     }
16
17 }
```

Truck Name:

Count





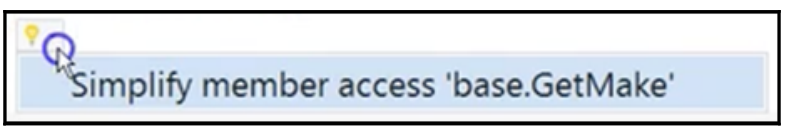
Chapter 38: Centralizing Common Code with Inheritance

```
1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3 <!DOCTYPE html>
4
5 <html xmlns="http://www.w3.org/1999/xhtml">
6 <head runat="server">
7     <title>Our First Page</title>
8 </head>
9 <body>
10     <form id="form1" runat="server">
11
12     <div> style="text-align: center;">
13           <asp:Label ID="sampLabel" runat="server" </asp:Label>
14     <div>
15
16    </form>
17 </body>
18 </html>
19
```

```
/// <summary>
/// Summary description for Vehicles
/// </summary>
public class Vehicles
{

    public Vehicles()
    {
        //
        // TODO: Add constructor logic here
        //
    }
}
```

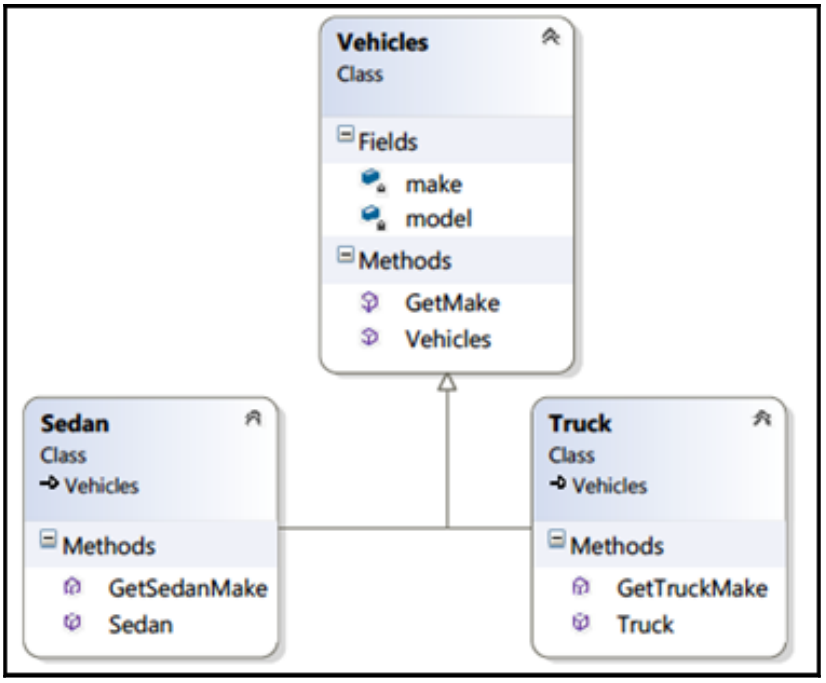
class Truck

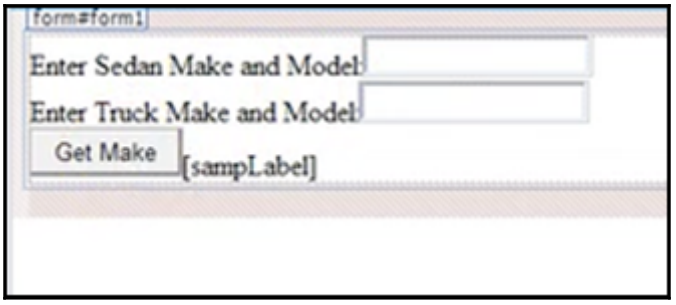
There is no argument given that corresponds to the required formal parameter 'mk' of 'Vehicles.Vehicles(string, string)'



class Truck

The namespace '<global namespace>' already contains a definition for 'Truck'





```
1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3 <!DOCTYPE html>
4
5 <html xmlns="http://www.w3.org/1999/xhtml">
6 <head runat="server">
7     <title>Our First Page</title>
8 </head>
9 <body>
10     <form id="form1" runat="server">
11     Enter Sedan Make and Model: <asp: TextBox ID="SedanBox" runat="server">< /asp:TextBox><br />
12     Enter Truck Make and Model: <asp: TextBox ID="TruckBox" runat="server">< /asp:TextBox><br />
13     <asp:Button ID="Button1" runat="server" Text="GetMake" OnClick="Button1_Click" /<br />
14
15     <asp:Label ID="sampLabel" runat="server" </asp:Label>
16
17
18    </form>
19 </body>
20 </html>
21
```

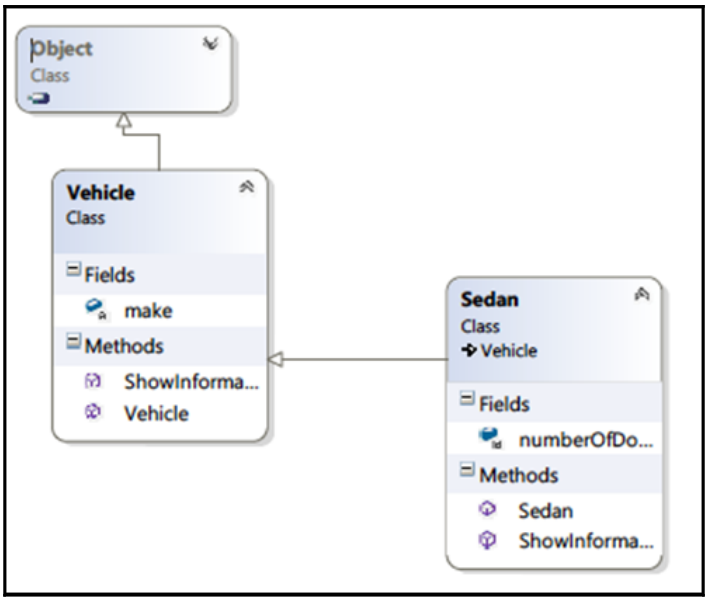
```
{
    protected void Button1_Click(object sender, EventArgs e)
    {

    }
}
```

Enter Sedan Make and Model: HOnda, Accord
Enter Truck Make and Model: FOrd, Explorer
Get Make
Your sedan is a HOnda
Your truck is a FOrd

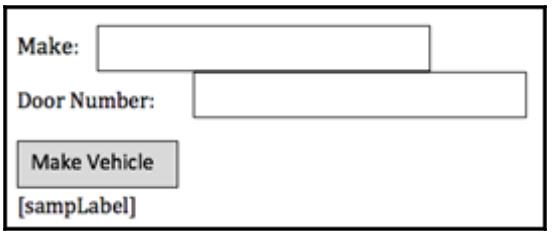
Chapter 39: Centralizing Default Code with Virtual Functions

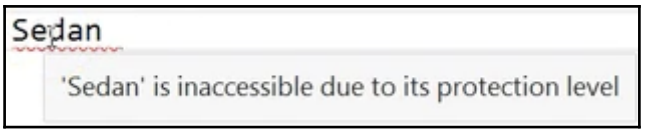
```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">

    <div style="text-align: center;">
        <asp:Label ID="sampLabel" runat="server"></asp:Label>
    </div>

    </form>
</body>
</html>
```

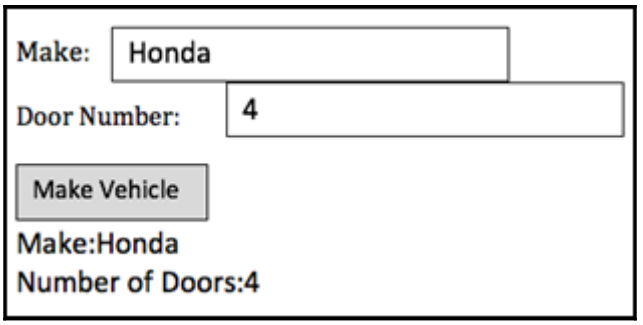
```
/// <summary>
/// Summary description for Vehicle
/// </summary>
public class Vehicle
{
  public Vehicle()
  {
        //
        // TODO: Add constructor logic here
        //
  }
}
```




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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">
    Make:<asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
    Door Number: <asp:TextBox ID="TextBox2" runat="server"></asp:TextBox><br />
    <asp:Button ID="Button1" runat="server" Text="Make Vehicle" OnClick="Button1_Click" /><br />
    <asp:Label ID="sampLabel" runat="server"></asp:Label>


    </form>
</body>
</html>
```



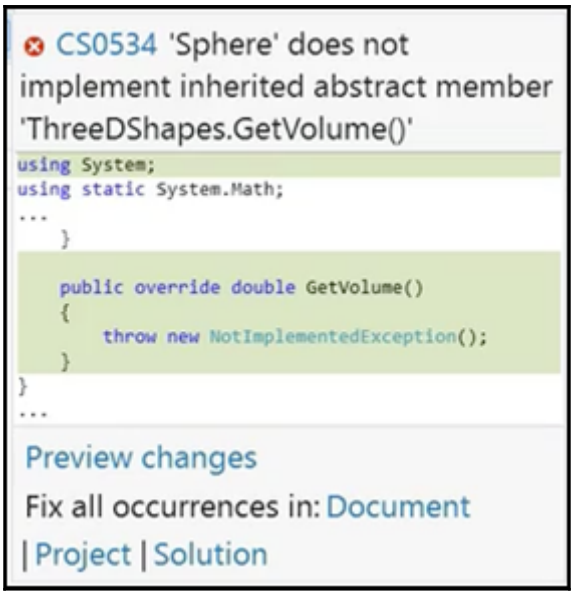

Sedan
'Sedan' is inaccessible due to its protection level

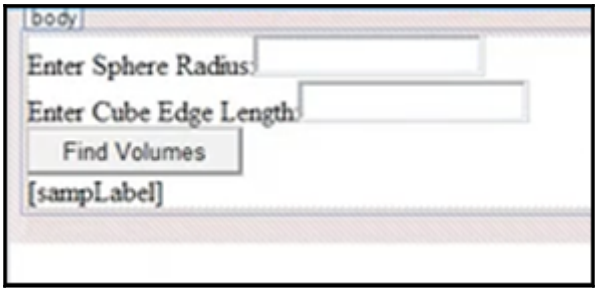

Make:
Honda
Door Number:
4
Make Vehicle
Make:Honda
Number of Doors:4

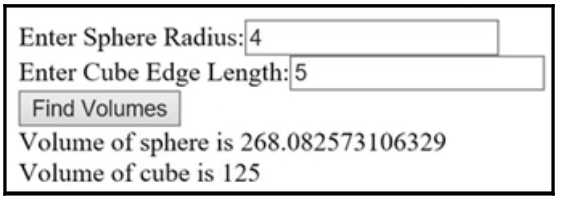
Chapter 40: Model Concepts with Abstract Classes

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">

        <asp:Label ID="sampLabel" runat="server"></asp:Label>

    </form>
</body>
</html>
```

```
public class ThreeDShapes
{
    public ThreeDShapes()
    {



    }
}
```

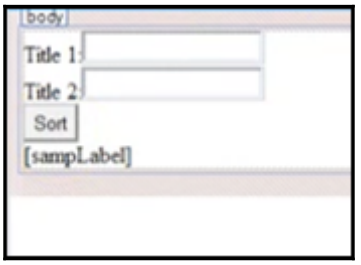

CS0534 'Sphere' does not implement inherited abstract member 'ThreeDShapes.GetVolume()'
using System;
using static System.Math;
...
}
public override double GetVolume()
{
throw new NotImplementedException();
}
}
...
Preview changes
Fix all occurrences in: Document
| Project | Solution


body
Enter Sphere Radius:
Enter Cube Edge Length:
Find Volumes
[sampLabel]

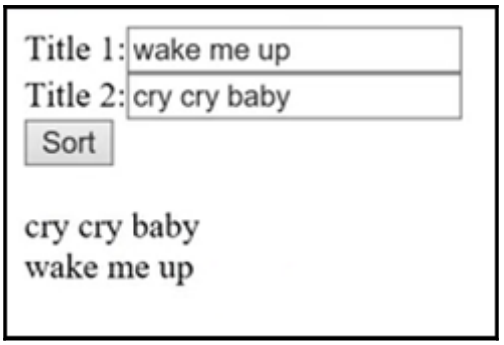

Enter Sphere Radius: 4
Enter Cube Edge Length: 5
Find Volumes
Volume of sphere is 268.082573106329
Volume of cube is 125

Chapter 41: Using Custom Types as Return Types

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">
    Title 1:<asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
    Title 2:<asp:TextBox ID="TextBox2" runat="server"></asp:TextBox><br />
        <asp:Button ID="Button1" runat="server" Text="Sort" OnClick="Button1_Click" /><br />

        <asp:Label ID="sampLabel" runat="server"></asp:Label>


    </form>
</body>
</html>

```

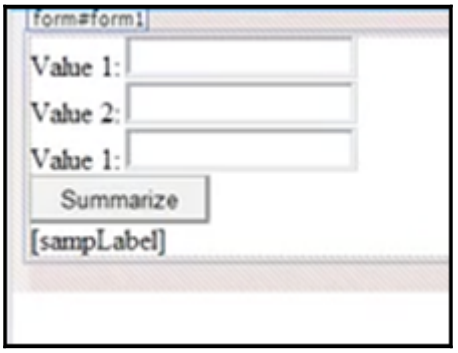



```
public class SongLibrary
{
    public SongLibrary()
    {



    }
    }
```

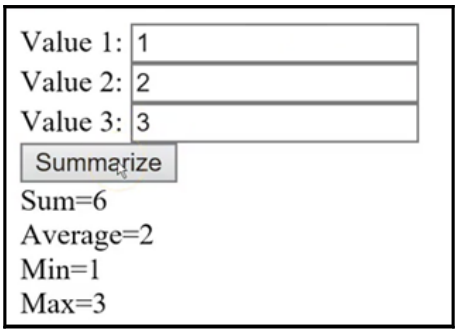

Title 1:
wake me up
Title 2:
cry cry baby
Sort
cry cry baby
wake me up

Chapter 42: Using Lists to Operate on Data Efficiently

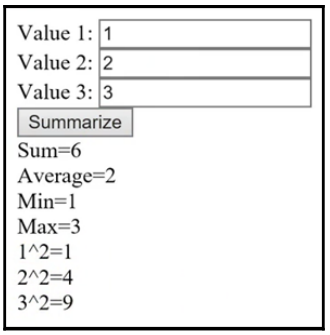
```
1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs"
Inherits="_Default" %>
2
3 <!DOCTYPE html>
4
5 <html xmlns="http://www.w3.org/1999/xhtml">
6 <head runat="server">
7      <title>Our First Page</title>
8 </head>
9 <body>
10     <form id="form1" runat="server">
11     Value 1: <asp: TextBox ID="TextBox1" runat="server">< /asp:TextBox><br />
12     Value 2: <asp: TextBox ID="TextBox2" runat="server">< /asp:TextBox><br />
13     Value 3: <asp: TextBox ID="TextBox3" runat="server">< /asp:TextBox><br />
14      <asp:Button ID="Button1" runat="server" Text="Summarize" /<br />
15      <asp:Label ID="sampLabel" runat="server" </asp:Label>
16
17
18     </form>
19 </body>
20 </html>
21
```

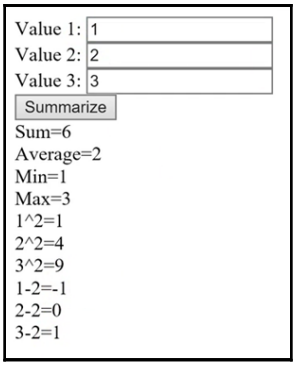


List<T>
Represents a strongly typed list of objects that can be accessed by index. Provides methods to search, sort, and manipulate lists.
T: *The type of elements in the list.*




```
void List<double>.ForEach(Action<double> action)
Performs the specified action on each element of the List<T>.
action: The Action<in T> delegate to perform on each element of the List<T>.
```

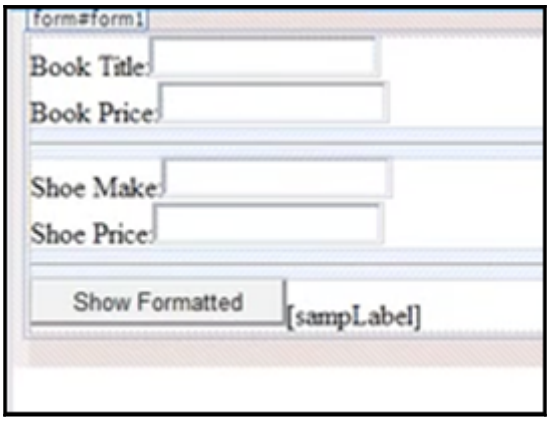




Chapter 43: Writing Less Code with Polymorphism

```
1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head runat="server">
7          <title>Our First Page</title>
8  </head>
9  <body>
10     <form id="form1" runat="server">
11
12         <asp:Label ID="sampLabel" runat="server"></asp:Label>
13
14     </form>
15 </body>
16 </html>
17
```

```
 9 public class Product
10 {
11
12     public Product()
13     {
14
15     }
16
17 }
```

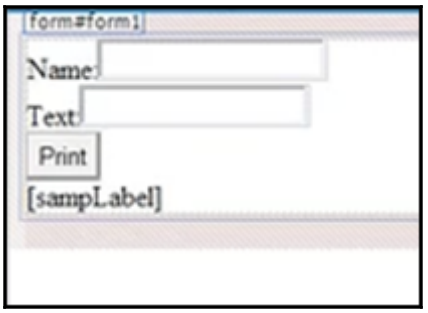

form#form1
Book Title:
Book Price:
Shoe Make:
Shoe Price:
Show Formatted
[sampLabel]


Book Title:Amazing Tales
Book Price:45.89
Shoe Make:Nike
Shoe Price:87.99
Show Formatted
Price:$45.89
Title:Amazing TalesPrice:$87.99
Make:Nike

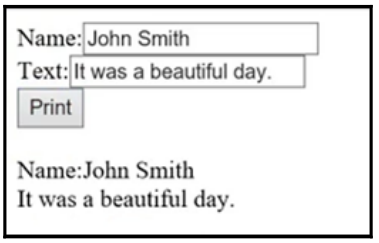
Chapter 44: Using Interfaces to Express Common Behaviors

```
1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3 <!DOCTYPE html>
4
5 <html xmlns="http://www.w3.org/1999/xhtml">
6 <head runat="server">
7     <title>Our First Page</title>
8 </head>
9 <body>
10     <form id="form1" runat="server">
11
12         <asp:Label ID="sampLabel" runat="server"></asp:Label>
13
14     </form>
15 </body>
16 </html>
17
```

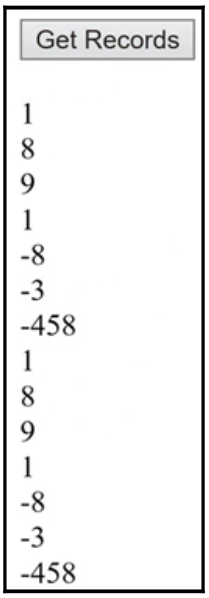
```
3  public interface IPrintable
4  {
5      string Print();
6  }
7  public class Person : IPrintable
8  {
9      public string Print()
10     {
11         throw new NotImplementedException;
12     }
13 }
```



```
10 public partial class _Default : System.Web.UI.Page
11 {
12     protected void Button1_Click(object sender, EventArgs e)
13     {
14
15     }
16 }
```



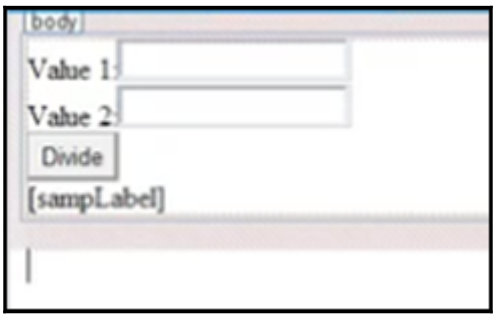
Chapter 45: Iterating over Instances with Indexers



Chapter 46: Building Stabler Apps with Exception Handling

```
1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head runat="server">
7      <title>Our First Page</title>
8  </head>
9  <body>
10     <form id="form1" runat="server">
11
12     </form>
13 </body>
14 </html>
```

```
1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head runat="server">
7      <title>Our First Page</title>
8  </head>
9  <body>
10     <form id="form1" runat="server">
11         Value 1:<asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
12         Value 2:<asp:TextBox ID="TextBox2" runat="server"></asp:TextBox><br />
13         <asp:Button ID="Button1" runat="server" Text="Divide" /><br />
14         <asp:Label ID="sampLabel" runat="server"></asp:Label>
15
16
17     </form>
18 </body>
19 </html>
```



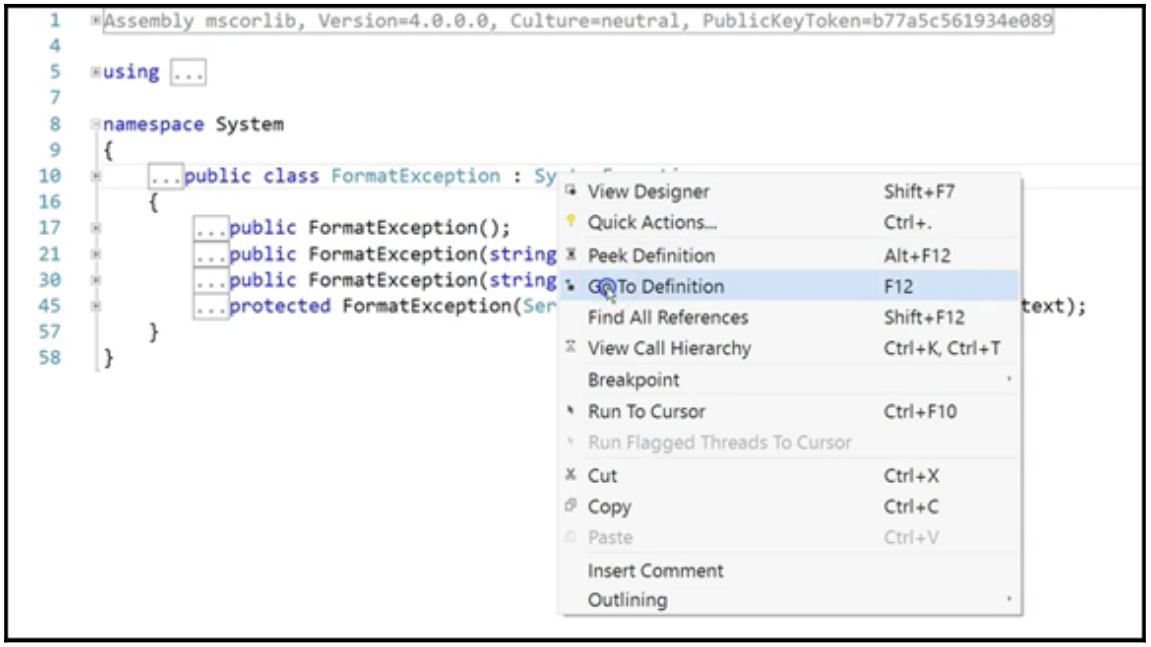
```
11      protected void Button1_Click(object sender, EventArgs e)
12      {
13          double x, y;// variables for reading input
14          try
15          {
16              //both lines below could generate format exceptions
17              x = Convert.ToDouble(TextBox1.Text);
18              y = Convert.ToDouble(TextBox2.Text);
19              if (y == 0)
20              {
21                  //throw a new object of DivideByZeroException type
22                  throw new DivideByZeroException();
23              }
24              else
25              {
26                  sampLabel.Text = $"{x}/{y}={x / y}";
27              }
28          }
29          //this catch runs when a user inputs 0
30          catch (DivideByZeroException ex)
31          {
32              sampLabel.Text = ex.Message;
33          }
34          //this block runs when a user inputs a word like "five" instead of "5"
35          catch (FormatException ex)
36          {
37              sampLabel.Text = ex.Message;
38                      }
39          finally
40          {
41              //this line always runs, no matter what happens above
42              sampLabel.Text += "<br>Your operation is complete.";
43          }
44      }
45  }
```

Value 1: 2
Value 2: 45
Divide
2/45=0.044444444444444
Your operation is complete.

Value 1: five
Value 2: 45
Divide
Input string was not in a correct format.
Your operation is complete.

Value 1: 6
Value 2: 0
Divide
Attempted to divide by zero.
Your operation is complete.

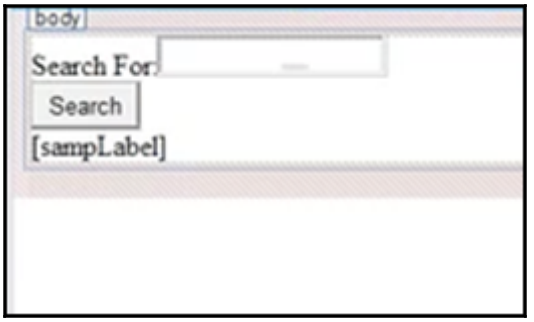
Value 1: 1
Value 2: Blg Project
Divide
Input string was not in a correct format.
at System.Number.ParseDouble(String value, NumberStyles options, NumberFormatInfo numfmt) at System.Convert.ToDouble (String value) at _Default.Button1_Click(Object sender, EventArgs e) in C:\Users\towsi\Documents\Visual Studio 2015 \WebSites\CSharpTemplateUpdated7636\Default.aspx.cs:line 17
Your operation is complete.



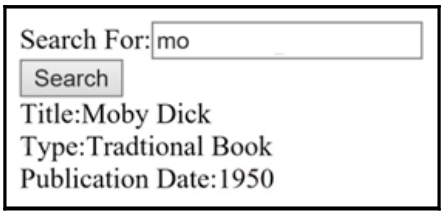
Chapter 47: Using Named and Optional Parameters

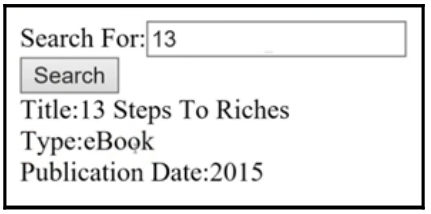
```
 9 public class Book
10 {
11         public Book()
12     {
13
14     }
```

```
 1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
 2
 3 <!DOCTYPE html>
 4
 5 <html xmlns="http://www.w3.org/1999/xhtml">
 6 <head runat="server">
 7     <title>Our First Page</title>
 8 </head>
 9 <body>
10     <form id="form1" runat="server">
11         Search For:<asp:TextBox ID="TextBox1" runat="server"></asp:TextBox><br />
12         <asp:Button ID="Button1" runat="server" Text="Search" /><br />
13
14         <asp:Label ID="sampLabel" runat="server"></asp:Label>
15
16
17     </form>
18 </body>
19 </html>
20
```



```
1 //using is a directive
2 //System is a name space
3 //name space is a collection of features that our needs to run
4 using System;
5 //public means accessible anywhere
6 //partial means this class is split over multiple files
7
8
9 public partial class _Default : System.Web.UI.Page
10 {
11     protected void Button1_Click(object sender, EventArgs e)
12     {
13
14     }
15 }
16
```



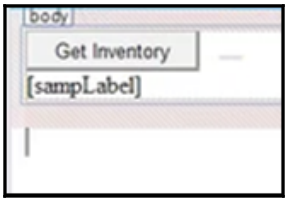


Chapter 48: Using the Null Coalescing Operator to Write Stabler Applications

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">

        <asp:Label ID="sampLabel" runat="server"></asp:Label>

    </form>
</body>
</html>
```

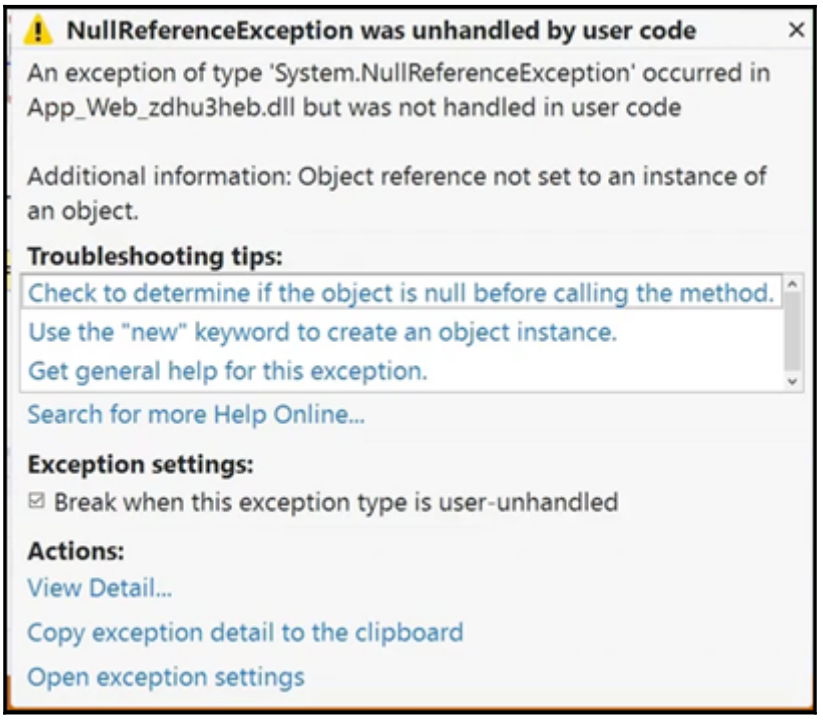
```
public class Car
{

    {

    }
}
```

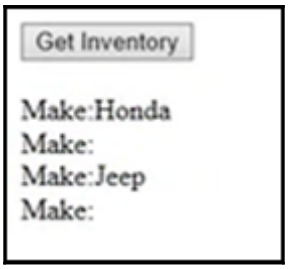
```
public class Car
{
    public string MakeModel { get; set; }//auto property
    public string PreviousOwner { get; set; }//auto property
    public Car(string makeModel, string prevOwner)
    {
        //set values of properties inside constructor
        MakeModel = makeModel;
        PreviousOwner = prevOwner;
    }
}
```

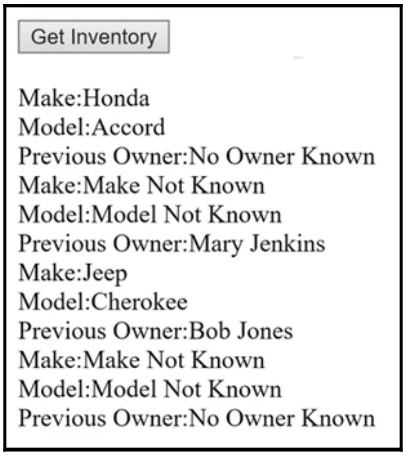


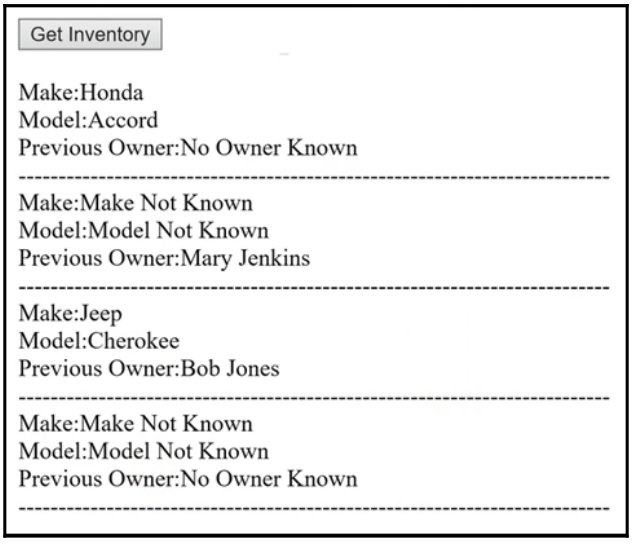
```
1 //using is a directive
2 //System is a name space
3 //name space is a collection of features that our needs to run
4 using System;
5 //public means accessible anywhere
6 //partial means this class is split over multiple files
7 //class is a keyword and think of it as the outermost level of grouping
8 //:System.Web.UI.Page means our page inherits the features of a Page
9 public partial class _Default : System.Web.UI.Page
10 {
11     protected void Button1_Click(object sender, EventArgs e)
12     {
13
14     }
15 }
```

```
string[] string.Split(params char[] separator) (+ 5 overloads)
Returns a string array that contains the substrings in this instance that are delimited by elements of a specified Unicode character array.
```




Get Inventory
Make:Honda
Make:
Make:Jeep
Make:

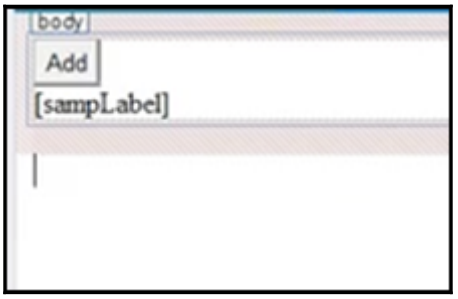

Get Inventory
Make:Honda
Model:Accord
Previous Owner:No Owner Known
Make:Make Not Known
Model:Model Not Known
Previous Owner:Mary Jenkins
Make:Jeep
Model:Cherokee
Previous Owner:Bob Jones
Make:Make Not Known
Model:Model Not Known
Previous Owner:No Owner Known


Get Inventory
Make:Honda
Model:Accord
Previous Owner:No Owner Known
Make:Make Not Known
Model:Model Not Known
Previous Owner:Mary Jenkins
Make:Jeep
Model:Cherokee
Previous Owner:Bob Jones
Make:Make Not Known
Model:Model Not Known
Previous Owner:No Owner Known

Chapter 49: Overloading Operators to Perform Custom Operations

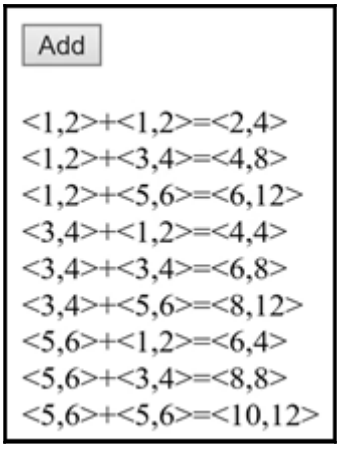
```
1
2 public class Vector
3 {
4     public Vector(double x, double y)
5     {
6
7     }
8 }
```

```
1 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3 <!DOCTYPE html>
4
5 <html xmlns="http://www.w3.org/1999/xhtml">
6 <head runat="server">
7     <title>Our First Page</title>
8 </head>
9 <body>
10     <form id="form1" runat="server">
11
12
13         <asp:Label ID="sampLabel" runat="server"></asp:Label>
14
15
16     </form>
17 </body>
18 </html>
19
```



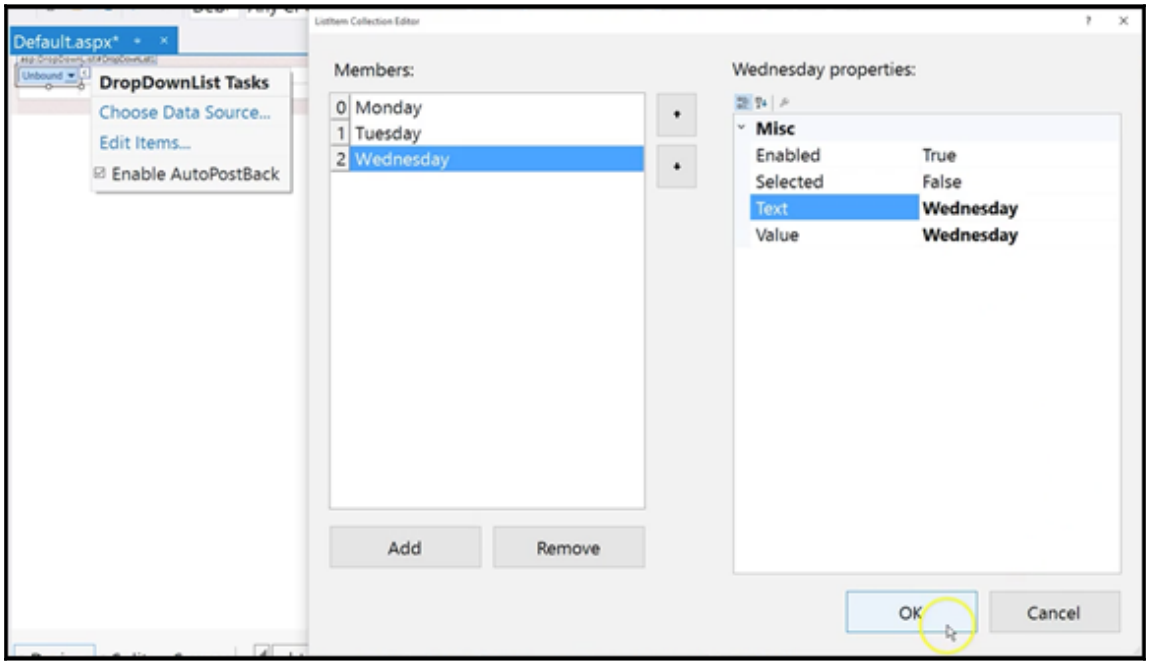
```
 5 //public means accessible anywhere
 6 //partial means this class is split over multiple files
 7 //class is a keyword and think of it as the outermost level of grouping
 8 //:System.Web.UI.Page means our page inherits the features of a Page
 9 public partial class _Default : System.Web.UI.Page
10 {
11     protected void Button1_Click(object sender, EventArgs e)
12     {
13
14     }
15 }
```

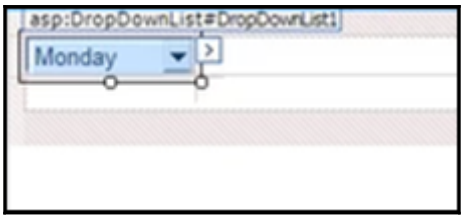
```
Vector Vector.operator +(Vector vec1, Vector vec2)
```



Chapter 50: Using Enumerations to Represent Named Constants

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">

    <div style="text-align:center;">
        <asp:Label ID="sampLabel" runat="server"></asp:Label>
    </div>

    </form>
</body>
</html>

```



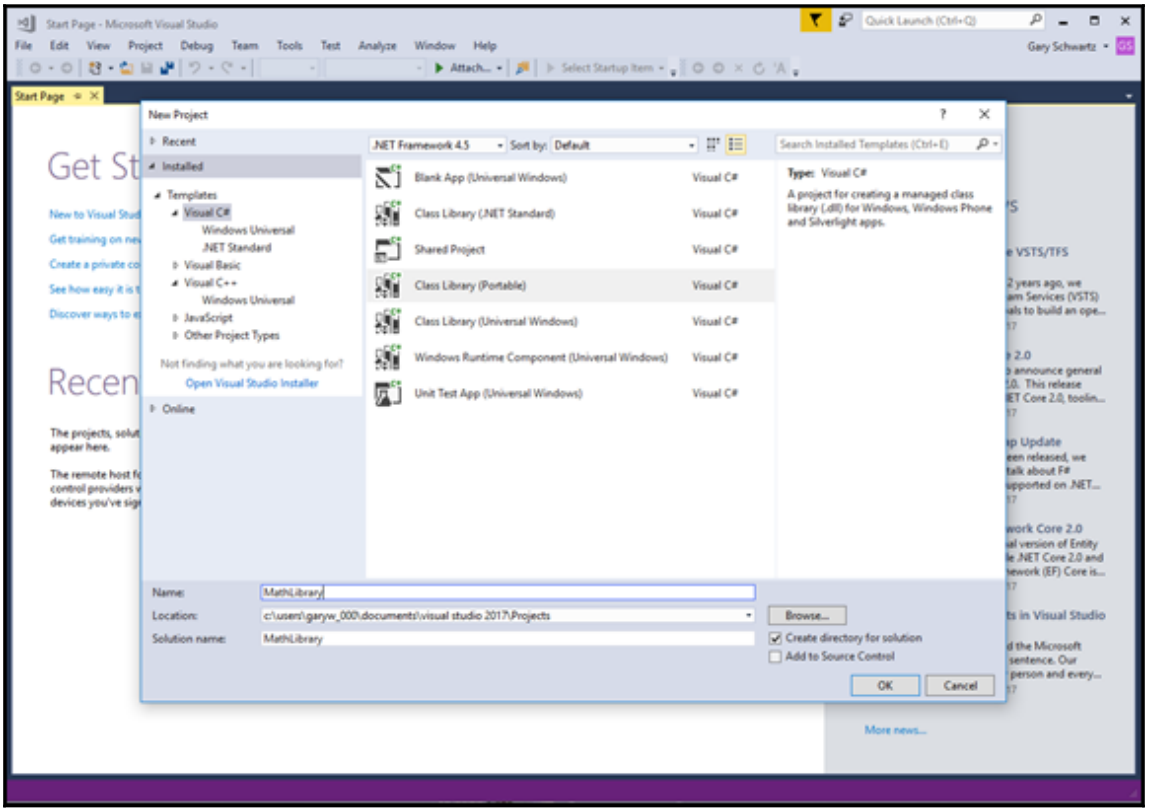



```
1 //using is a directive
2 //System is a name space
3 //name space is a collection of features that our needs to run
4 using System;
5 //public means accessible anywhere
6 //partial means this class is split over multiple files
7 //class is a keyword and think of it as the outermost level of grouping
8 //:System.Web.UI.Page means our page inherits the features of a Page
9 public partial class _Default : System.Web.UI.Page
10 {
11     protected void DropDownList1_SelectedIndexChanged(object sender, EventArgs e)
12     {
13
14     }
15 }
```

System.Web.UI.WebControls.ListItem System.Web.UI.WebControls.ListControl.SelectedItem { get; }
Gets the selected item with the lowest index in the list control.

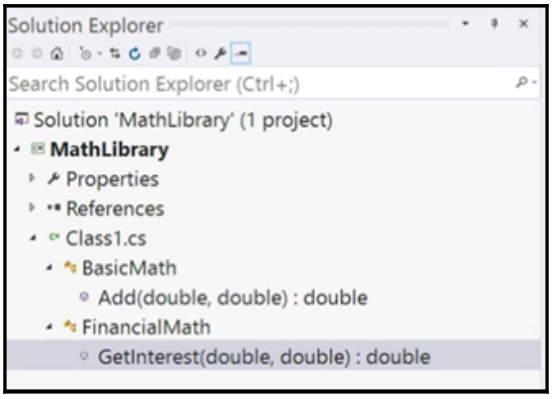
A switch expression or case label must be a bool, char, string, integral, enum, or corresponding nullable type

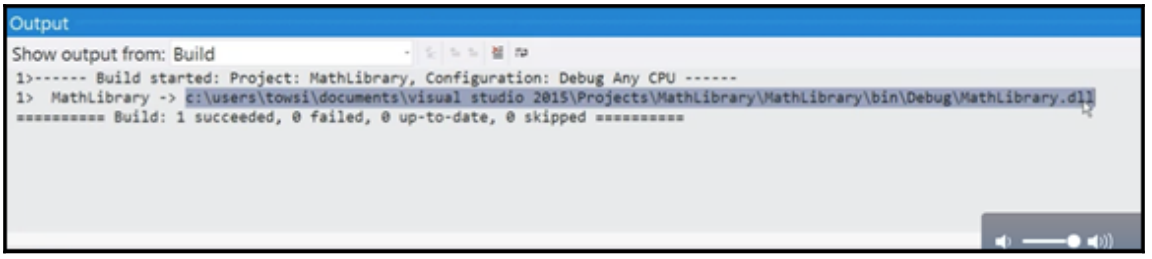
Chapter 51: Creating and Using Namespaces

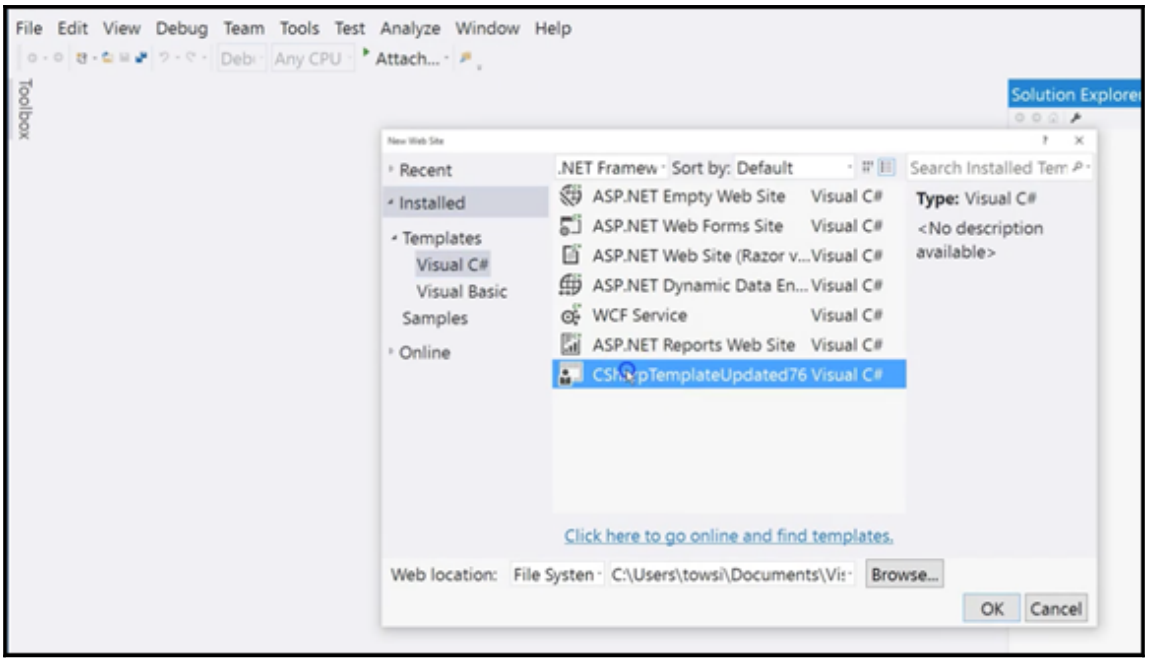



```
 7 namespace MathLibrary //define a namespace
 8 {
 9     public class Class1
10     {
11         {
12         }
13     }
```

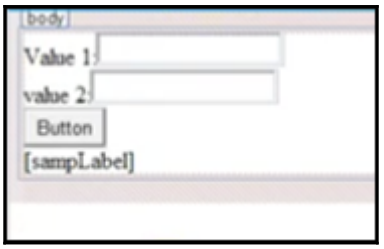
```
1 namespace MathLibrary //define a namespace
2 {
3     public class BasicMath//define a basic math class
4     {
5         public double Add(double x, double y)//define a basic function like Add
6         {
7             return x + y;
8         }
9     }
10    //code below is as above, just for a finanicial math class
11    public class FinancialMath
12    {
13        public double GetInterest(double prin, double rate)
14        {
15            return prin * rate;
16        }
17    }
18 }
19
```

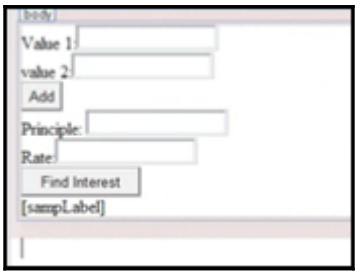




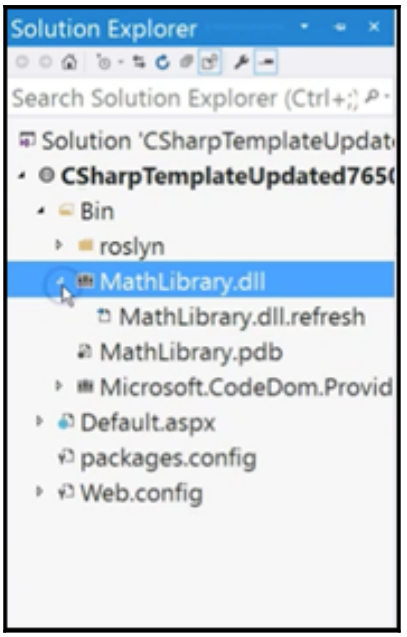


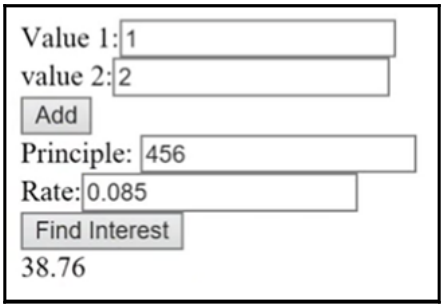

```
1  <%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>
2
3  <!DOCTYPE html>
4
5  <html xmlns="http://www.w3.org/1999/xhtml">
6  <head runat="server">
7      <title>Our First Page</title>
8  </head>
9  <body>
10     <form id="form1" runat="server">
11
12     <div style="text-align:center;">
13         <asp:Button ID="Button1" runat="server" Text="Add" /><br />
14     <div=v>
15
16     </form>
17 </body>
18 </html>
19
```






```
1 //using is a directive
2 //System is a name space
3 //name space is a collection of features that our needs to run
4 using System;
5 //public means accessible anywhere
6 //partial means this class is split over multiple files
7 //class is a keyword and think of it as the outermost level of grouping
8 //:System.Web.UI.Page means our page inherits the features of a Page
9 public partial class _Default : System.Web.UI.Page
10 {
11     protected void Button1_Click(object sender, EventArgs e)
12     {
13
14     }
15 }
```


Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'CSharpTemplateUpdat
CSharpTemplateUpdated765
Bin
roslyn
MathLibrary.dll
MathLibrary.dll.refresh
MathLibrary.pdb
Microsoft.CodeDom.Provid
Default.aspx
packages.config
Web.config

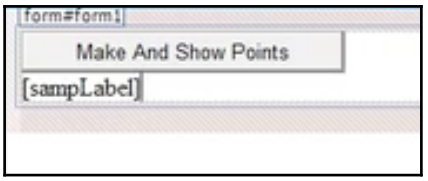

Value 1: 1
value 2: 2
Add
Principle: 456
Rate: 0.085
Find Interest
38.76

Chapter 52: Structs, Random Points, and Sleeping Threads

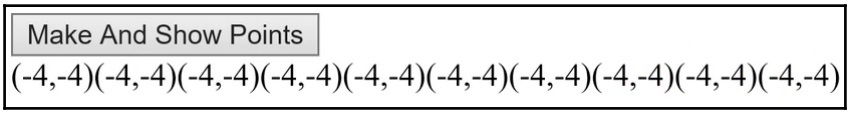
```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="Default.aspx.cs" Inherits="_Default" %>

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">

    <asp:Label ID="sampLabel" runat="server"></asp:Label>

    </form>
</body>
</html>

```

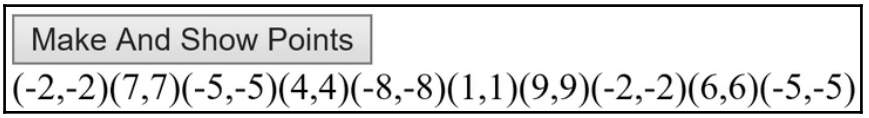
```
public struct Point //struct declaration
{
    public double X { get; set; } //auto properties
    public double Y { get; set; }
    public Point(double x, double y)
    {
        X = x; Y = y; //set values of auto properties through constructor
    }
}
```

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">
        <asp:Button ID="Button1" runat="server" Text="Make And Show Points" /><br />

    <asp:Label ID="sampLabel" runat="server"></asp:Label>

    </form>
</body>
</html>

```



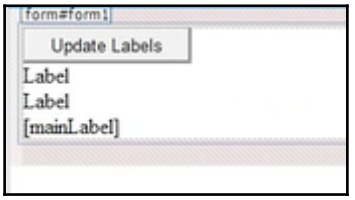

```
10 public partial class _Default : System.Web.UI.Page
11 {
12     protected void Button1_Click(object sender, EventArgs e)
13     {
14
15     }
16 }
```

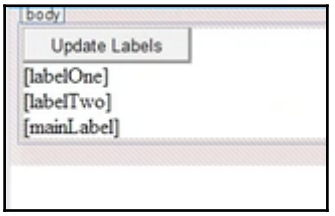




Chapter 53: Declaring, Creating, and Using Delegates

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

<!DOCTYPE html>

<html xmlns="http://www.w3.org/1999/xhtml">
<head runat="server">
    <title>Our First Page</title>
</head>
<body>
    <form id="form1" runat="server">

        <asp:Label ID="sampLabel" runat="server"></asp:Label>

    </form>
</body>
</html>

```

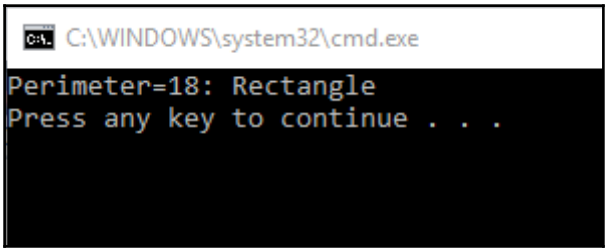


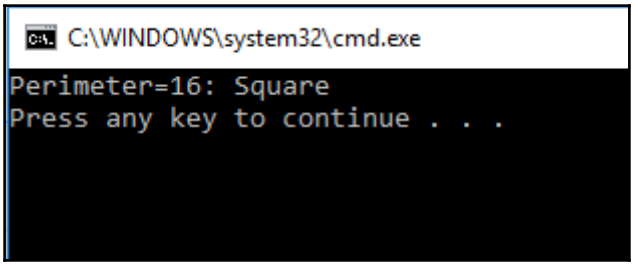


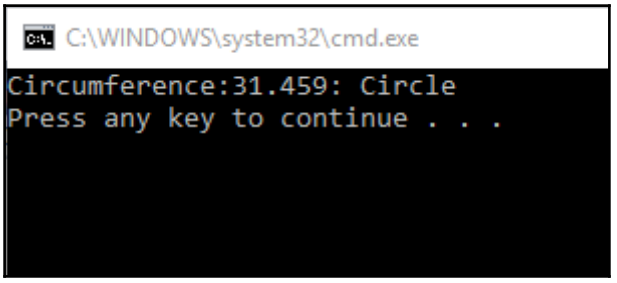

```
public partial class _Default : System.Web.UI.Page
{

    protected void Button1_Click(object sender, EventArgs e)
    {


    }
}
```

Update Labels
10/16/2015 5:11:47 PM
10/16/2015 5:11:52 PM
Labels finished updated at:10/16/2015 5:11:57 PM

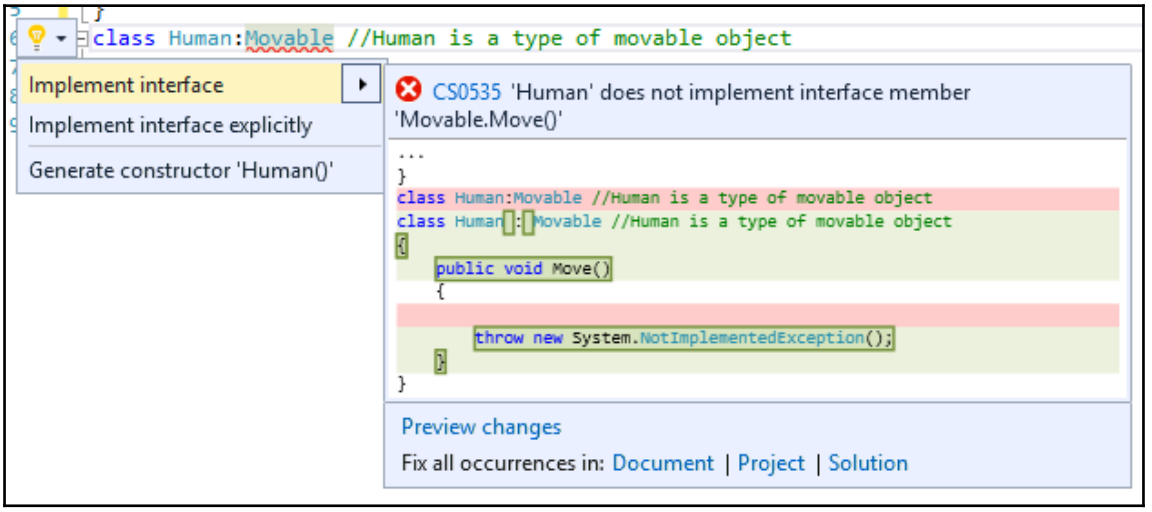
Chapter 54: Switch Blocks with when

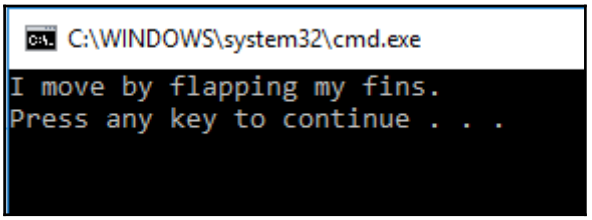


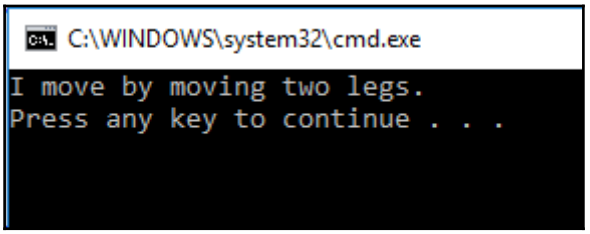




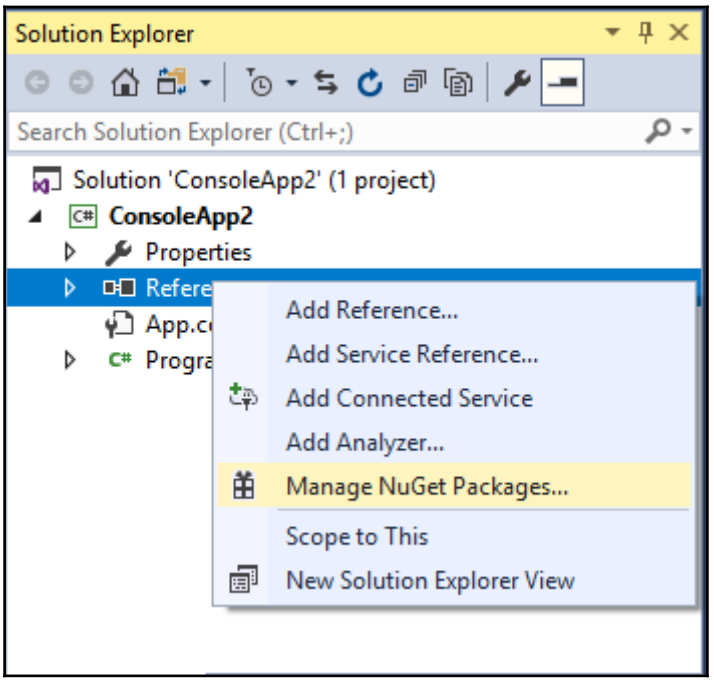
Chapter 55: Switch Blocks with Objects in C# 7.0

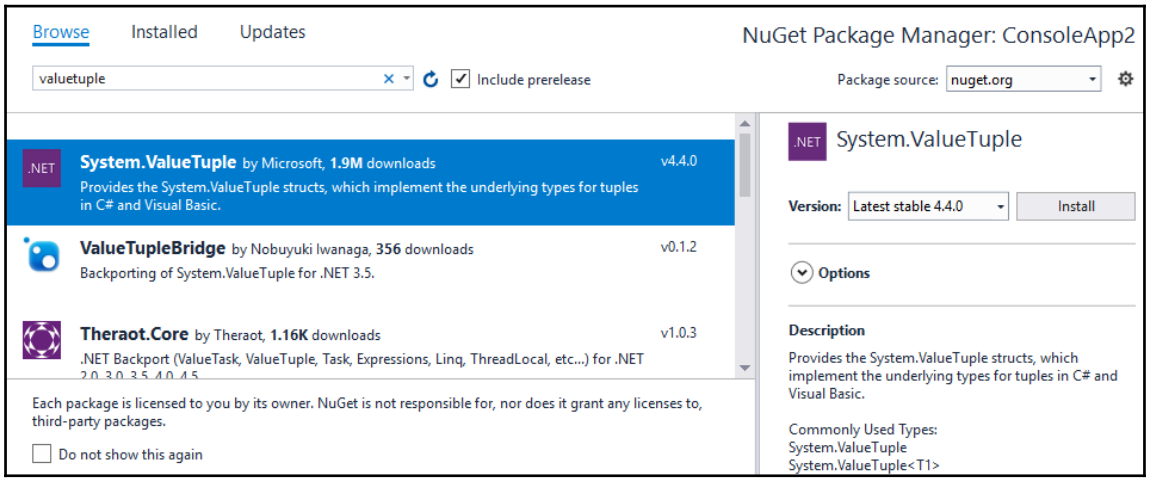






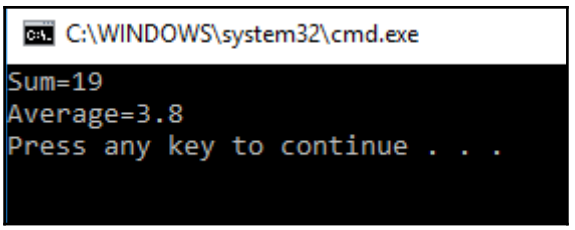
Chapter 56: Tuples



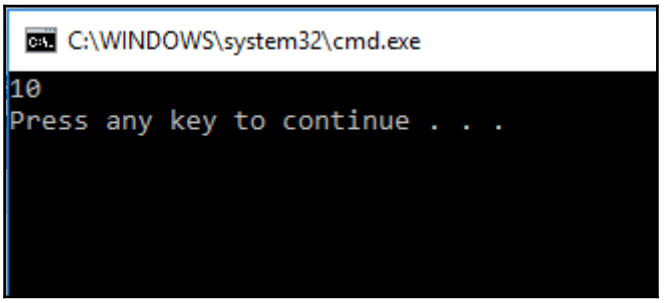


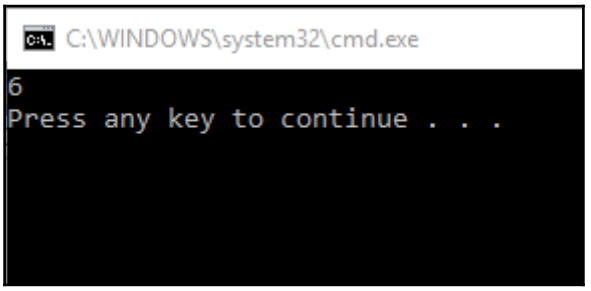
```
var (sum, average) = Summarize(new double[] { 1, 4, 5, 3, 6 });
```

```
(double sum, double average) Program.Summarize(double[] arr)
```



Chapter 57: Local functions in C# 7.0





Chapter 58: Throwing Exceptions