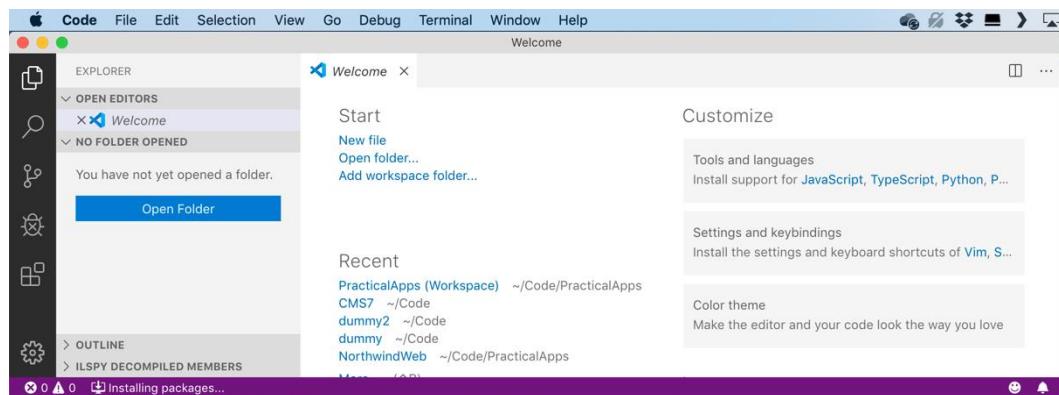
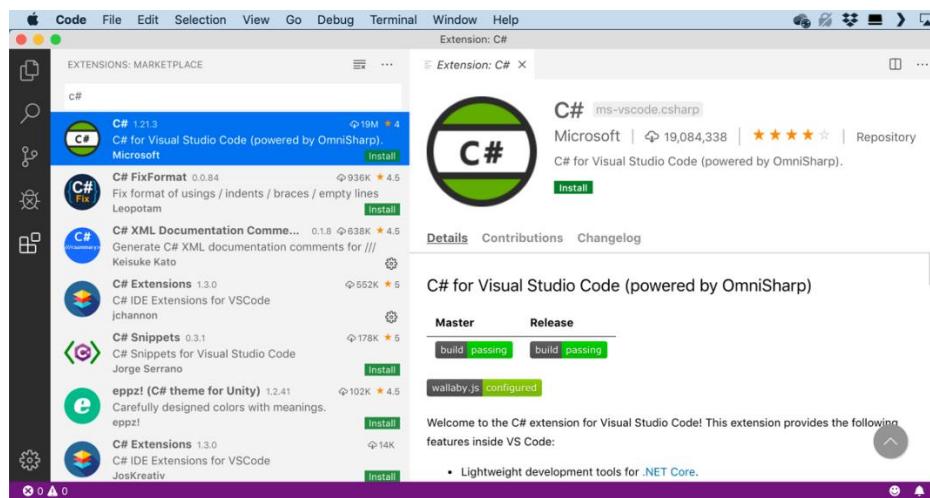
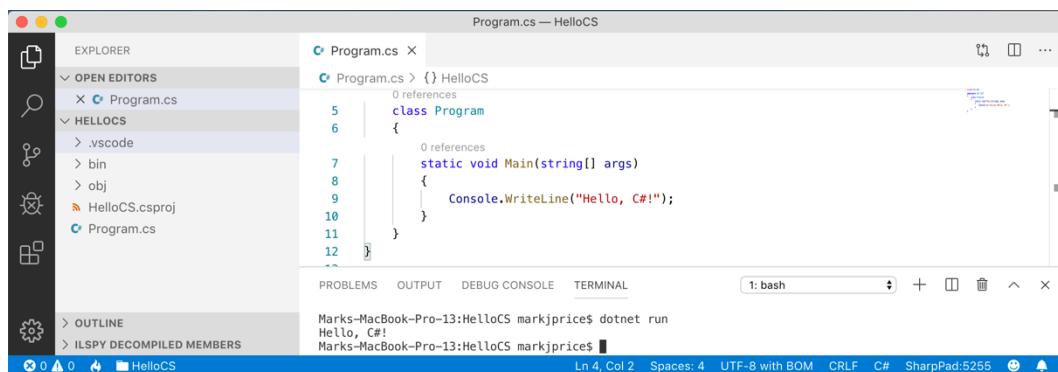
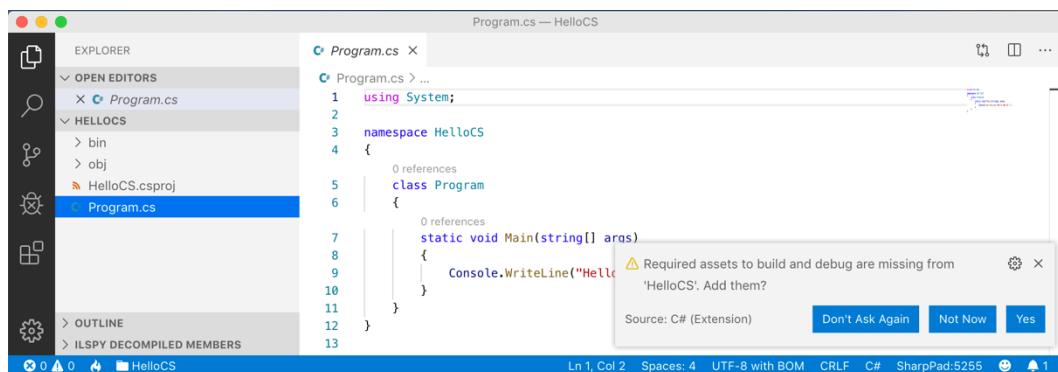
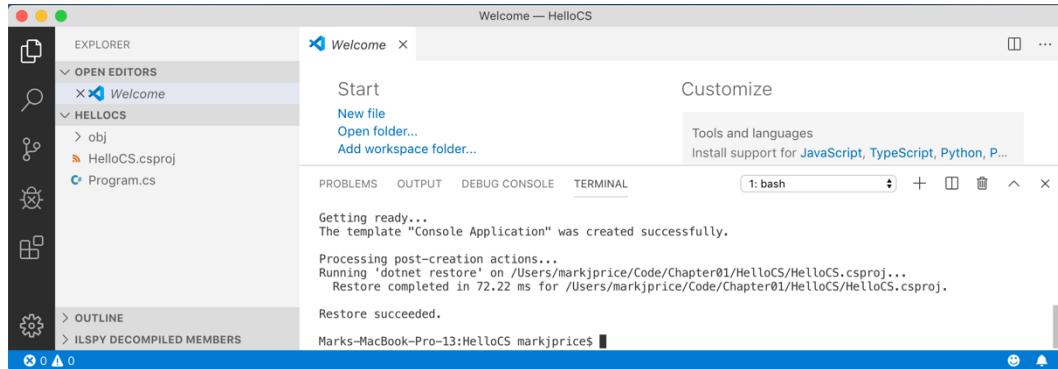


Chapter 1: Hello, C#! Welcome, .NET!





A screenshot of Visual Studio Code on a Mac. The interface includes a dark-themed sidebar with icons for file operations, search, and other tools. The main area shows an 'EXPLORER' sidebar with a tree view of a repository named 'cs8dotnetcore3'. Under this tree, there are folders for 'Assets', 'Chapter01' through 'Chapter07', and a 'Changelog'. Below the tree are sections for 'OUTLINE' and 'ILSPY DECOMPILATED MEMBERS'. A large central panel displays a terminal window titled 'Repos' with the command 'git clone https://github.com/markjprice/cs8dotnetcore3.git' being run. The output shows the progress of cloning, including object enumeration, counting, compressing, and packing steps, along with a final message about reused objects and a total size of 32.12 MB.

A screenshot of Visual Studio Code showing the decompiled code for the `Int32` struct. The 'OPEN EDITORS' sidebar lists 'Program.cs' and '[metadata] Int32.cs'. The main editor pane displays the following C# code:

```
1 #region Assembly System.Runtime, Version=4.2.1.0, Culture=neutral, PublicKeyToken=b03f5f7f143449c
```

```
2 // System.Runtime.dll
```

```
3 #endregion
```

```
4
```

```
5 using System.Globalization;
```

```
6 using System.Runtime.CompilerServices;
```

```
7
```

```
8 namespace System
```

```
9 {
```

```
10    //
```

```
11    // Summary:
```

```
12    //     Represents a 32-bit signed integer.
```

```
13    public readonly struct Int32 : IComparable, IComparable<Int32>, IConvertible, IEquatable<Int32>
```

```
14    {
```

```
15        //
```

```
16        // Summary:
```

```
17        //
```

A screenshot of Visual Studio Code showing the full implementation of the `Int32` struct. The 'OPEN EDITORS' sidebar lists 'Program.cs' and '[metadata] Int32.cs'. The main editor pane displays the following C# code:

```
86    //
```

```
87    // Summary:
```

```
88    //     Converts the string representation of a number to its 32-bit signed integer value.
```

```
89    //
```

```
90    // Parameters:
```

```
91    //     s:
```

```
92    //         A string containing a number to convert.
```

```
93    //
```

```
94    // Returns:
```

```
95    //     A 32-bit signed integer equivalent to the number contained in s.
```

```
96    //
```

```
97    // Exceptions:
```

```
98    //     T:System.ArgumentNullException:
```

```
99    //         s is null.
```

```
100   //
```

```
101  //     T:System.FormatException:
```

```
102  //         s is not in the correct format.
```

```
103  //
```

```
104  //     T:System.OverflowException:
```

```
105  //         s represents a number less than System.Int32.MinValue or greater than System.Int32.MaxValue.
```

```
106  [NullableContextAttribute(1)]
```

```
107  public static Int32 Parse(string s);
```

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Search Results

Results for securestring

500 results

179 votes 11 answers

Q: When would I need a SecureString in .NET?
 I'm trying to grok the purpose of .NET's **SecureString**. From MSDN: An instance of the System.String class is both immutable and, when no longer needed, cannot be programmatically scheduled for ... from computer memory. A **SecureString** object is similar to a String object in that it has a text value. However, the value of a **SecureString** object is automatically encrypted, can be modified ...

.net security encryption asked Sep 26 '08 by Richard Morgan

Microsoft Azure
 Build and develop apps with Azure. Free until you say otherwise.
[Try Azure Free](#)


Tessian
 Cybersecurity

Google

All Images Maps News Videos More Settings Tools

About 190,000,000 results (0.71 seconds)

In computer science, **garbage collection** (GC) is a form of automatic memory management. The **garbage collector**, or just **collector**, attempts to reclaim **garbage**, or memory occupied by objects that are no longer in use by the program.



Garbage collection (computer science) - Wikipedia
[https://en.wikipedia.org/wiki/Garbage_collection_\(computer_science\)](https://en.wikipedia.org/wiki/Garbage_collection_(computer_science))

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Garbage collection (computer science) - Wikipedia
[https://en.wikipedia.org/wiki/Garbage_collection_\(computer_science\)](https://en.wikipedia.org/wiki/Garbage_collection_(computer_science)) ▾
 In computer science, garbage collection (GC) is a form of automatic memory management. The **garbage collector**, or just **collector**, attempts to reclaim **garbage**, or memory occupied by objects that are no longer in use by the program.
 Strategies · Reference counting · Availability · Garbage Collectors for ...

Find out your rubbish collection day - GOV.UK
<https://www.gov.uk/government/collections/local-councils-and-services> ▾
 Check your council's website to find out when your rubbish will be collected.

Chapter 2: Speaking C#

The screenshot shows the SharpPad IDE interface. The Explorer sidebar on the left lists 'OPEN EDITORS' (Program.cs), 'BASICS' (including .vscode, bin, obj, Basics.csproj), and 'OUTLINE'. The main editor window displays 'Program.cs — Basics' with the following code:

```
Program.cs — Basics
Program.cs > {} Basics > Basics.Program > Main(string[] args)
5   class Program
6   {
7       0 references
8       static void Main(string[] args)
9       {
10          Console.WriteLine("Hello World!");
11      }
12  }
```

The Problems tab shows one error: 'Console' does not contain a definition for 'Writeline' [CS0117] [Basics] [9, 21]. The status bar at the bottom indicates Ln 9, Col 46, Spaces: 4, UTF-8 with BOM, CRLF, C#, SharpPad:5255.

The screenshot shows the SharpPad IDE interface. The Explorer sidebar on the left lists 'OPEN EDITORS' (Program.cs), 'NUMBERS' (including .vscode, bin, obj, Numbers.csproj), and 'OUTLINE'. The main editor window displays 'Program.cs — Numbers' with the following code:

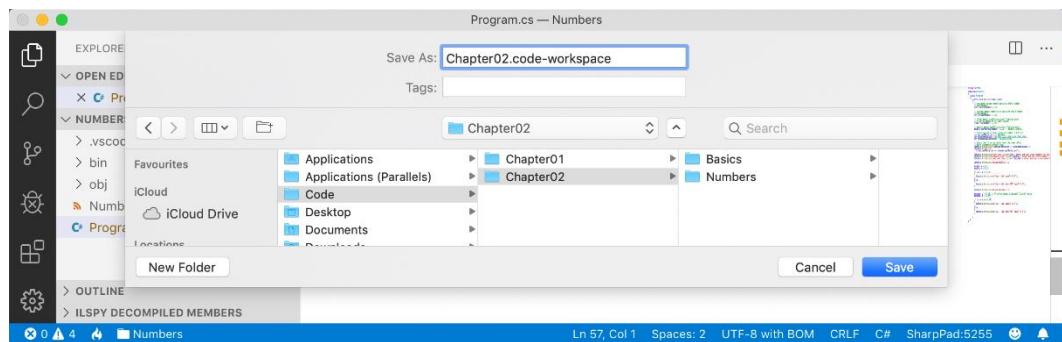
```
Program.cs — Numbers
Program.cs > {} Numbers > Numbers.Program > Main(string[] args)
35  Console.WriteLine($"int uses {sizeof(int)} bytes and can store numbers in the range {int.MinValue:N0} to {int.MaxValue:N0}");
36  Console.WriteLine($"double uses {sizeof(double)} bytes and can store numbers in the range {double.MinValue:N0} to {double.MaxValue:N0}");
37  Console.WriteLine($"decimal uses {sizeof(decimal)} bytes and can store numbers in the range {decimal.MinValue:N0} to {decimal.MaxValue:N0}");

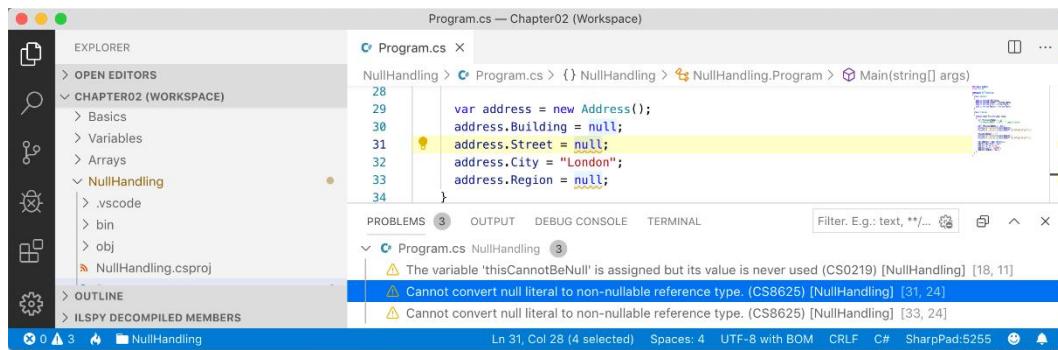
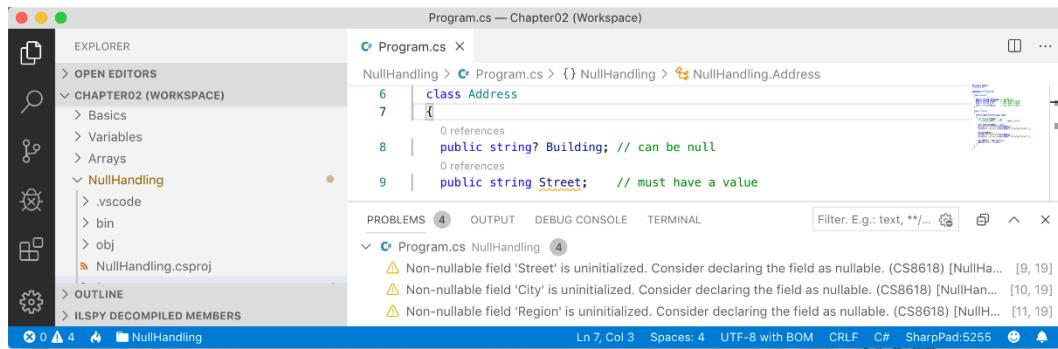
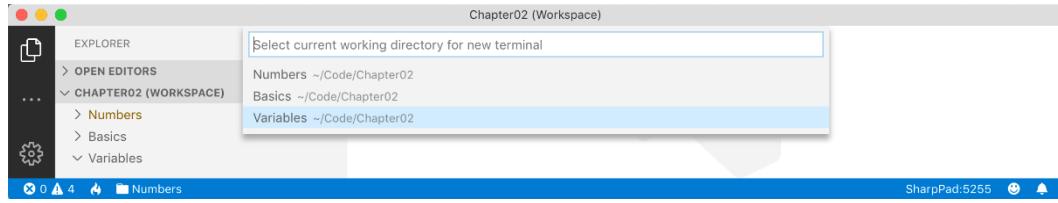
int uses 4 bytes and can store numbers in the range -2,147,483,648 to 2,147,483,647.
double uses 8 bytes and can store numbers in the range -179,769,313,486,231,570,814,527,423,731,704,356,798,070,567,525,844,996,598,917,476,8
03,157,269,788,028,538,768,589,558,632,766,878,171,540,458,053,514,382,464,234,321,326,889,464,182,768,467,546,703,537,516,986,049,910,576,55
1,282,076,245,490,090,389,328,944,075,868,508,455,133,942,304,583,236,903,222,948,165,808,559,332,123,348,274,797,826,204,144,723,168,738,177
180,919,299,881,250,404,026,184,124,858,368 to 179,769,313,486,231,570,814,527,423,731,704,356,798,070,567,525,844,996,598,917,476,803,157,2
60,780,028,538,768,589,558,632,766,878,171,540,458,953,514,382,464,234,321,326,889,464,182,768,467,546,703,537,516,986,049,910,576,551,282,07
6,245,490,090,389,328,944,075,868,508,455,133,942,304,583,236,903,222,948,165,808,559,332,123,348,274,797,826,204,144,723,168,738,177,180,919
299,881,250,404,026,184,124,858,368.

decimal uses 16 bytes and can store numbers in the range -79,228,162,514,264,337,593,543,950,335 to 79,228,162,514,264,337,593,543,950,335.

Marks-MacBook-Pro-13:Numbers markjprices ]
```

The status bar at the bottom indicates Ln 38, Col 6, Spaces: 2, UTF-8 with BOM, CRLF, C#, SharpPad:5255.





Program.cs — Chapter02 (Workspace)

Formatting > Program.cs > {} Formatting > Formatting.Program > Main(string[] args)

```
12 Console.WriteLine("Console.WriteLine(\"{0}\")");
13 format: "{0} apples costs {1:C}";
14 arg0: numberOfApples;
15 arg1: pricePerApple * numberOfApples;
16
17 string formatted = string.Format(
18     format: "{0} apples costs {1:C}",
19     arg0: numberOfApples,
20     arg1: pricePerApple * numberOfApples);
21
22 //WriteToFile(formatted); // writes the string into a file
23
24 Console.WriteLine($"numberOfApples: {numberOfApples}, pricePerApple: {pricePerApple}, numbero
25
```

Ln 13, Col 15 (8 selected) Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

The screenshot shows the SharpPad IDE interface. The left sidebar has sections for EXPLORER, OPEN EDITORS, and CHAPTER02 (WORKSPACE). The OPEN EDITORS section lists 'Formatting' and 'Program.cs'. The CHAPTER02 (WORKSPACE) section lists 'NullHandling', 'Formatting', '.vscode', 'bin', 'obj', 'Formatting.csproj', and 'Program.cs'. The main editor window displays C# code for printing the cost of apples. A 'Replace' dialog is open over the code, with the search term 'Console.WriteLine("Console.WriteLine(""' and the replacement term 'format: "{0}"'. The status bar at the bottom shows the line and column numbers, and the file path 'Program.cs — Chapter02 (Workspace)'.

Program.cs — Chapter02 (Workspace)

Arguments > Program.cs > {} Arguments > Arguments.Program > Main(string[] args)

```
30 enumType: typeof(ConsoleColor),
31 value: args[1],
32 ignoreCase: true;
33
34 WindowWidth = int.Parse(args[2]);
35 WindowHeight = int.Parse(args[3]);
36
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2:bash

Unhandled exception: System.PlatformNotSupportedException: Operation is not supported on this platform.
at System.ConsoleWindow.set_WindowWidth(Int32 value)
at System.Console.set_WindowWidth(Int32 value)
at Arguments.Program.Main(String[] args) in /Users/markjprice/Code/Chapter02/Arguments/Program.cs:line 34

Ln 36, Col 6 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

This screenshot shows the SharpPad IDE after running the program with arguments. The terminal tab shows the output of the program, which fails with a 'PlatformNotSupportedException' because the current platform does not support changing the size of a console window. The code in the editor shows the attempt to parse command-line arguments for window width and height.

Program.cs — Chapter02 (Workspace)

Arguments > Program.cs > {} Arguments > Arguments.Program > Main(string[] args)

```
39     catch (PlatformNotSupportedException)
40     {
41         WriteLine("The current platform does not support changing the size of a console window.");
42     }
43 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 2:bash

There are 4 arguments.
red
yellow
50
10
The current platform does not support changing the size of a console window.

Ln 40, Col 8 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

This screenshot shows the SharpPad IDE after running the program with arguments again. The terminal tab shows the output of the program, which now handles the 'PlatformNotSupportedException' by catching it and printing an error message instead of crashing. The code in the editor shows the addition of a try-catch block around the window width and height assignment.

Chapter02 (Workspace)

EXPLORER

OPEN EDITORS

CHAPTER02 (WORKSPACE)

- > Arrays
- > NullHandling
- > Formatting
- > Arguments
- < Exercise02
 - > .vscode
 - > bin
 - > obj
 - Exercise02.csproj
 - Program.cs
- > OUTLINE
- > ILSPY DECOMPILED MEMBERS

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

3: bash

Marks-MacBook-Pro-13:Exercise02 markjprice\$ dotnet run

| Type | Byte(s) of memory | Min | Max |
|---------|-------------------|--------------------------------|-------------------------------|
| sbyte | 1 | -128 | 127 |
| byte | 1 | 0 | 255 |
| short | 2 | -32768 | 32767 |
| ushort | 2 | 0 | 65535 |
| int | 4 | -2147483648 | 2147483647 |
| uint | 4 | 0 | 4294967295 |
| long | 8 | -9223372036854775808 | 9223372036854775807 |
| ulong | 8 | 0 | 18446744073709551615 |
| float | 4 | -3.4028235E+38 | 3.4028235E+38 |
| double | 8 | -1.7976931348623157E+308 | 1.7976931348623157E+308 |
| decimal | 16 | -79228162514264337593543950335 | 79228162514264337593543950335 |

SharpPad:5255

The screenshot shows the Visual Studio Code interface with the title bar "Chapter02 (Workspace)". The left sidebar is the "EXPLORER" view, showing a tree structure of files and folders under "CHAPTER02 (WORKSPACE)". The "TERMINAL" tab is active, displaying a command-line session on a Mac: "Marks-MacBook-Pro-13:Exercise02 markjprice\$ dotnet run". Below the terminal is a table titled "Marks-MacBook-Pro-13:Exercise02 markjprice\$ dotnet run" showing memory dump data. The table has columns for Type, Byte(s) of memory, Min, and Max. It lists various primitive data types with their respective byte sizes, minimum values, and maximum values.

Chapter 3: Controlling Flow and Converting Types

Program.cs — Chapter03 (Workspace)

EXPLORER

- OPEN EDITORS
- CHAPTER03 (WORKSPACE)
 - SelectionStatements
 - IterationStatements
 - CastingConverting
 - .vscode
 - bin
 - obj
 - CastingConverting.csproj
 - Program.cs

Program.cs

CastingConverting > Program.cs > {} CastingConverting

0 references

```
static void Main(string[] args)
{
    int a = 10;
    double b = a; // an int can be safely cast into a double
    WriteLine(b);

    double c = 9.8;
    int d = c; // compiler gives an error for this line
    WriteLine(d);
}
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

Program.cs CastingConverting 1

Cannot implicitly convert type 'double' to 'int'. An explicit conversion exists (are you missing a cast?)... [15, 15]

Ln 19, Col 2 Spaces: 2 UTF-8 with BOM CRLF C# SharpPad:5255

Program.cs — Chapter03 (Workspace)

EXPLORER

- OPEN EDITORS
- CHAPTER03 (WORKSPACE)
 - CastingConverting
 - HandlingExceptions
 - CheckingForOverflow
 - .vscode
 - bin
 - obj
 - CheckingForOverflow.csproj
 - Program.cs

Program.cs

CheckingForOverflow > Program.cs > {} CheckingForOverflow > CheckingForOverflow.csproj > Main(string[] args)

int int.MaxValue = 2147483647

catch (OverflowException ex)

{

WriteLine(ex.Message);

}

int y = int.MaxValue + 1;

Peek Problem No quick fixes available

The operation overflows at compile time in checked mode (CS0220) [CheckingForOverflow]

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

Program.cs CheckingForOverflow 1

The operation overflows at compile time in checked mode (CS0220) [CheckingForOverflow] [29, 15]

Ln 28, Col 1 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

Chapter03 (Workspace)

EXPLORER

- OPEN EDITORS
- CHAPTER03 (WORKSPACE)
 - Exercise03
 - .vscode
 - bin
 - obj
 - Exercise03.csproj
 - Program.cs

Exercise03

PROBLEMS OUTPUT TERMINAL ...

4: bash

```
Marks-MacBook-Pro-13:Exercise03 markjprice$ dotnet run
1, 2, Fizz, 4, Buzz, Fizz, 7, 8, Fizz, Buzz,
11, Fizz, 13, 14, FizzBuzz, 16, 17, Fizz, 19, Buzz,
Fizz, 22, 23, Fizz, Buzz, 26, Fizz, 28, 29, FizzBuzz,
31, 32, Fizz, 34, Buzz, Fizz, 37, 38, Fizz, Buzz,
41, Fizz, 43, 44, FizzBuzz, 46, 47, Fizz, 49, Buzz,
Fizz, 52, 53, Fizz, Buzz, 56, Fizz, 58, 59, FizzBuzz,
61, 62, Fizz, 64, Buzz, Fizz, 67, 68, Fizz, Buzz,
71, Fizz, 73, 74, FizzBuzz, 76, 77, Fizz, 79, Buzz,
Fizz, 82, 83, Fizz, Buzz, 86, Fizz, 88, 89, FizzBuzz,
91, 92, Fizz, 94, Buzz, Fizz, 97, 98, Fizz, Buzz
```

SharpPad:5255

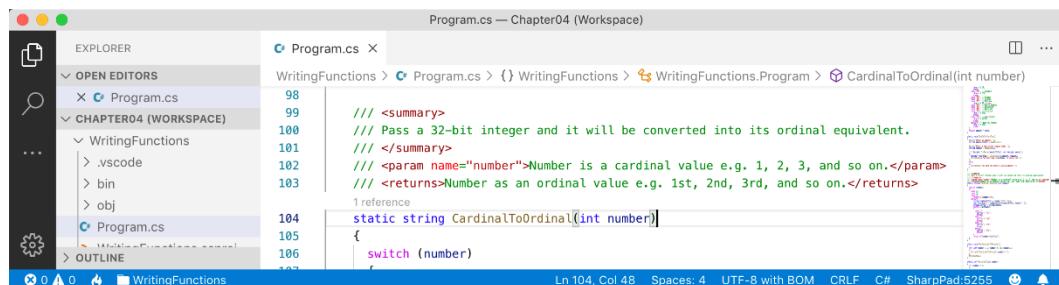
Chapter 4: Writing, Debugging, and Testing Functions



Program.cs — Chapter04 (Workspace)

```
Program.cs X
WritingFunctions > Program.cs > {} WritingFunctions > WritingFunctions.Program > RunCardinalToOrdinal()
0 references
static void RunCardinalToOrdinal()
{
    for (int number = 1; number <= 100; number++)
    {
        string Program.CardinalToOrdinal(int number)
        Write($"{CardinalToOrdinal(number)} ");
    }
    WriteLine();
}
Ln 134, Col 36 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255
```

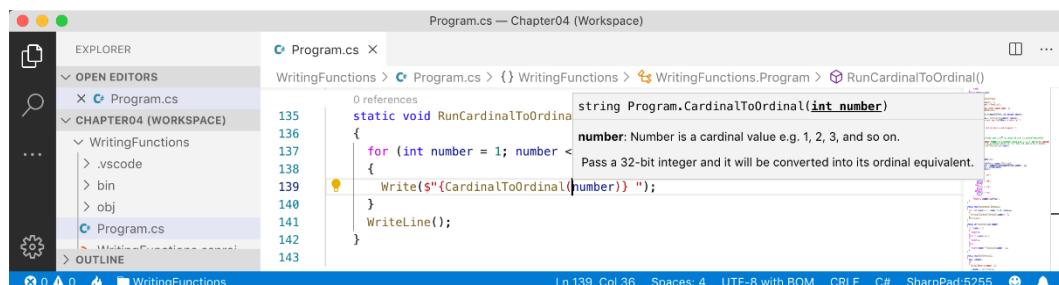
This screenshot shows the Visual Studio Code interface with the 'Program.cs' file open. The cursor is positioned at the end of the line 'string Program.CardinalToOrdinal(int number)'. A code completion dropdown is visible, showing the suggestion 'Write(\$"CardinalToOrdinal(number)")';. The rest of the code in the function 'RunCardinalToOrdinal' is also visible.



Program.cs — Chapter04 (Workspace)

```
Program.cs X
WritingFunctions > Program.cs > {} WritingFunctions > WritingFunctions.Program > CardinalToOrdinal(int number)
98
99     /// <summary>
100    /// Pass a 32-bit integer and it will be converted into its ordinal equivalent.
101    /// </summary>
102    /// <param name="number">Number is a cardinal value e.g. 1, 2, 3, and so on.</param>
103    /// <returns>Number as an ordinal value e.g. 1st, 2nd, 3rd, and so on.</returns>
104
105    static string CardinalToOrdinal(int number)
106    {
107        switch (number)
108    }
Ln 104, Col 48 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255
```

This screenshot shows the 'Program.cs' file with the cursor at the start of the 'CardinalToOrdinal' method definition. A code completion dropdown is open, showing the suggestion 'static string CardinalToOrdinal(int number)'.



Program.cs — Chapter04 (Workspace)

```
Program.cs X
WritingFunctions > Program.cs > {} WritingFunctions > WritingFunctions.Program > RunCardinalToOrdinal()
0 references
static void RunCardinalToOrdinal()
{
    for (int number = 1; number <=
    {
        string Program.CardinalToOrdinal(int number)
        Write($"{CardinalToOrdinal(number)} ");
    }
    WriteLine();
}
Ln 139, Col 36 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255
```

This screenshot shows the 'Program.cs' file with the cursor at the end of the line 'string Program.CardinalToOrdinal(int number)'. A code completion dropdown is visible, showing the suggestion 'Write(\$"CardinalToOrdinal(number)")';. The rest of the code in the function 'RunCardinalToOrdinal' is also visible.

The screenshot shows the SharpPad IDE interface. The left sidebar has sections for 'OPEN EDITORS' (Program.cs Debugging), 'CHAPTER04 (WORKSPACE)' (containing .vscode, bin, obj, Debugging.csproj, Program.cs), and 'OUTLINE'. The main editor window displays the following C# code:

```
static void Main(string[] args)
{
    double a = 4.5; // or use var
    double b = 2.5;
    double answer = Add(a, b);
    WriteLine($"{a} + {b} = {answer}");
    ReadLine(); // wait for user to press ENTER
}
```

The status bar at the bottom shows: Ln 13, Col 5 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

The screenshot shows the SharpPad IDE interface. The left sidebar has sections for 'CODE' (File, Selection, View, Go, Debug, Terminal, Window, Help), 'DEBUG' (.NET Core Launch (console) (WritingFunctions), .NET Core Attach (WritingFunctions), .NET Core Attach (Debugging)), 'VARIABLES' (Add Config (WritingFunctions)..., Add Config (Debugging)..., Add Config (workspace)...), and 'WATCH'. A context menu is open over the 'DEBUG' section, with '.NET Core Launch (console) (Debugging)' highlighted. The main editor window displays the same C# code as the first screenshot. The status bar at the bottom shows: Ln 13, Col 6 (1 selected) Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

The screenshot shows the SharpPad IDE interface. The left sidebar has sections for 'CODE' (File, Selection, View, Go, Debug, Terminal, Window, Help), 'DEBUG' (selected), 'VARIABLES' (Locals, Watch, Call Stack, Paused on Break..., Breakpoints), and 'BREAKPOINTS' (All Exceptions, User-Unhandled Exceptions, Program.cs Debug...). The main editor window displays the C# code. The status bar at the bottom shows: Ln 13, Col 6 (1 selected) Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

Program.cs — Chapter04 (Workspace)

DEBUG .NET Core Launch (console) (Debugging) Debugging

```
args [string[]]: {string[0]}
a [double]: 4.5
b [double]: 2.5
answer [double]: 0
```

VARIABLES

Locals

WATCH

CALL STACK PAUSED ON BREAKPOINT

BREAKPOINTS

All Exceptions

User-Unhandled Exceptions

Program.cs Debugging

10 }
11 }
12 0 references
13 static void Main(string[] args)
14 {
15 double a = 4.5; // or use var
16 double b = 2.5;
17 double answer = Add(a, b);
18 WriteLine(\$"{a} + {b} = {answer}");
19 ReadLine(); // wait for user to press ENTER
20 }

Ln 16, Col 33 (26 selected) Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

Program.cs — Chapter04 (Workspace)

DEBUG .NET Core Launch (console) (Debugging) Debugging

```
a [double]: 4.5
b [double]: 2.5
```

VARIABLES

Locals

WATCH

a * b: 11.25

CALL STACK PAUSED ON BREAKPOINT

BREAKPOINTS

All Exceptions

User-Unhandled Exceptions

Program.cs Debugging

4 {
5 0 references
6 class Program
7 {
8 static double Add(double a, double b)
9 {
10 return a * b; // deliberate bug!
11 }
12 0 references
13 static void Main(string[] args)
14 {
15 double a = 4.5; // or use var
16 double b = 2.5;
17 double answer = Add(a, b);
18 WriteLine(\$"{a} + {b} = {answer}");
19 ReadLine(); // wait for user to press ENTER
20 }

Ln 9, Col 19 (5 selected) Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

Program.cs — Chapter04 (Workspace)

DEBUG .NET Core Launch (console) (Debugging) Debugging

> VARIABLES

> WATCH

> CALL STACK PAUSED ON BREAKPOINT

> BREAKPOINTS

All Exceptions

User-Unhandled Exceptions

Program.cs Debugging

12 static void Main(string[] args)
13 {
14 double a = 4.5; // or use var
15 double b = 2.5;
16 double answer = Add(a, b);
17 WriteLine(\$"{a} + {b} = {answer}");
18 ReadLine(); // wait for user to press ENTER

Ln 17, Col 1 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255

A screenshot of the SharpPad IDE interface. The title bar says "Program.cs — Chapter04 (Workspace)". The left sidebar has sections for VARIABLES, WATCH, CALL STACK (PAUSED ON BREAKPOINT), and BREAKPOINTS. Under BREAKPOINTS, there are checkboxes for All Exceptions, User-Unhandled Exceptions, and Program.cs Debugging, with the latter being checked. The main code editor shows the following C# code:

```
13     {
14         double a = 4.5; // or use var
15         double b = 2.5;
16         double answer = Add(a, b);
17         Expression: answer < 9 ${"a"} + {b} = {answer});
18         Hit Count: 3 ; // wait for user to press ENTER
19     }
20 }
21 }
```

The status bar at the bottom indicates ".NET Core Launch (console) (Debugging)" and "Ln 17, Col 1 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255".

A screenshot of the SharpPad IDE interface. The title bar says "Program.cs — Chapter04 (Workspace)". The left sidebar shows the EXPLORER section with "OPEN EDITORS" containing "Program.cs Dumping" and "SharpPad", and "CHAPTER04 (WORKSPACE)" containing ".vscode", "bin", "obj", "Dumping.csproj", and "Program.cs". The main code editor shows the following C# code:

```
10 static async Task Main(string[] args)
11 {
12     var complexObject = new
13     {
14         FirstName = "Petr",
15         BirthDate = new DateTime(
16             year: 1972, month: 12, day: 25)
17         Friends = new[] { "Amir", "Geoff"
18     };
19 }
```

To the right of the code editor is a "SharpPad" window titled "complexObject" showing the decompiled members:

| Name | Type | Value |
|---|----------------|--------------------------|
| AnonymousType<string, DateTime, String[]> | Anonymous Type | |
| FirstName | String | "Petr" |
| BirthDate | DateTime | "1972-12-25T00:00:00" |
| Friends | String[] | {"Amir", "Geoff", "Sal"} |

The status bar at the bottom indicates "Dumping" and "Ln 10, Col 1 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255".

A screenshot of the SharpPad IDE interface. The title bar says "Program.cs — Chapter04 (Workspace)". The left sidebar has sections for VARIABLES, WATCH, CALL STACK (selected), and BREAKPOINTS. The main code editor shows the following C# code:

```
7     static void Main(string[] args)
8     {
9         Debug.WriteLine("Debug says, I am watching!");
10        Trace.WriteLine("Trace says, I am watching!");
11    }
12 }
```

The status bar at the bottom indicates ".NET Core Launch (console) (Instrumenting)" and "Ln 7, Col 1 Spaces: 4 UTF-8 with BOM CRLF C# SharpPad:5255".

The screenshot shows the SharpPad 2 IDE interface. The title bar says "Program.cs — Chapter04 (Workspace)". The main window displays the code for Program.cs:

```
Instrumenting > C Program.cs > {} Instrumenting > C Instrumenting.Program > M Main(string[] args)
32
33
34
35
36
37
38
39
40
41
42
```

The variable pane on the left shows a breakpoint at line 40, which is highlighted in yellow. The variables pane lists:

- System.Diagnostics.TraceSwitch.TraceVerbose.g_...
- args [String[]]: {string[0]}
- > builder [IConfigurationBuilder]: {Microsoft.E...
- > configuration [IConfigurationRoot]: {Microsof...
- ts: {System.Diagnostics.TraceSwitch}
- > Attributes: {System.Collections.Specialized...
- Description [String]: "This switch is set vi...
- DisplayName [String]: "PacktSwitch"
- Level [TraceLevel]: Info
- SwitchSetting [int]: 3
- TraceError [bool]: true
- TraceInfo [bool]: true
- TraceVerbose [bool]: false
- TraceWarning [bool]: true
- Value [String]: "0"

The bottom status bar indicates: ".NET Core Launch (console) (Instrumenting)" and "Instrumenting".

The screenshot shows the SharpPad 2 IDE interface with a terminal tab open. The title bar says "Chapter04 (Workspace)". The terminal output shows the results of a dotnet test run:

```
Marks-MacBook-Pro-13:CalculatorLibUnitTests markjprices dotnet test
Test run for /Users/markjprice/Code/Chapter04/CalculatorLibUnitTests/bin/Debug/netcoreapp3.0/CalculatorLibUnitTests.dll(.NETCoreApp,Version=v3.0)
Microsoft (R) Test Execution Command Line Tool Version 16.3.0
Copyright (c) Microsoft Corporation. All rights reserved.

Starting test execution, please wait...
A total of 1 test files matched the specified pattern.

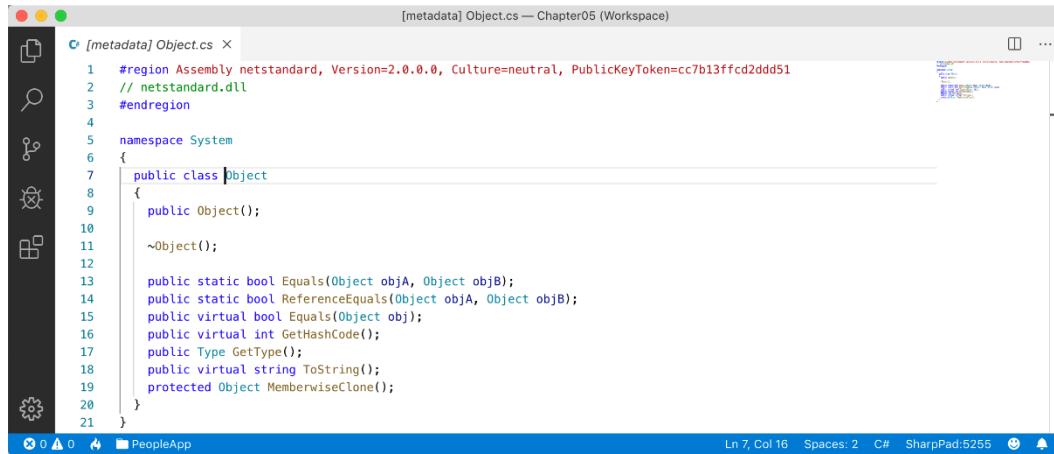
0:00.73]    CalculatorLibUnitTests.CalculatorUnitTests.TestAdding2And3 [FAIL]
ibUnitTests.CalculatorUnitTests.TestAdding2And3 [7ms]
  Error Message:
    Assert.Equal() Failure
    Expected: 5
    Actual: 6
      Stack Trace:
        at CalculatorLibUnitTests.CalculatorUnitTests.TestAdding2And3() in /Users/markjprice/Code/Chapter04/Ca
lculatorLibUnitTests/CalculatorUnitTests.cs:line 38

Test Run Failed.
Total tests: 2
  Passed: 1
  Failed: 1

Total time: 1.5416 Seconds
Marks-MacBook-Pro-13:CalculatorLibUnitTests markjprices
```

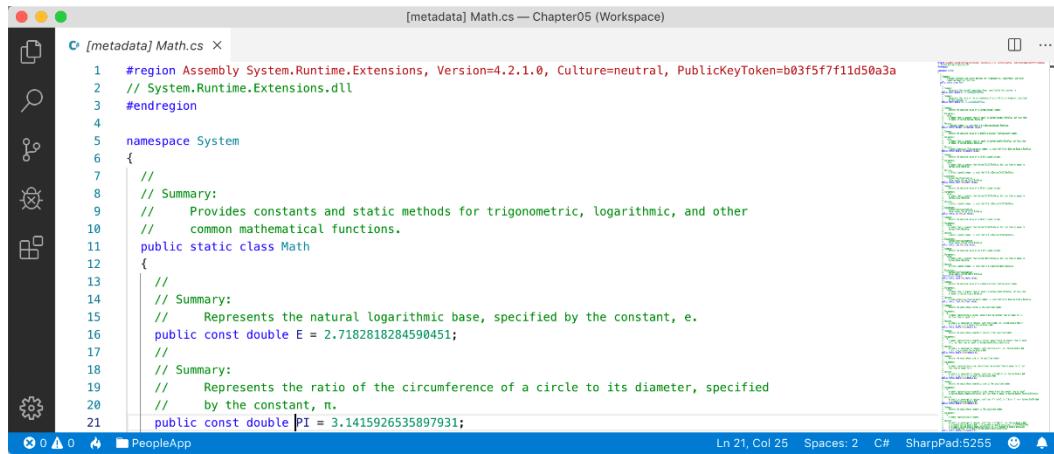
The bottom status bar indicates: "SharpPad:5255".

Chapter 5: Building Your Own Types with Object-Oriented Programming



A screenshot of the SharpPad code editor showing the `Object.cs` file. The code defines the `Object` class in the `System` namespace. It includes methods for equality comparison (`Equals`, `ReferenceEquals`), cloning (`MemberwiseClone`), and getting type information (`GetType`, `ToString`). The code editor interface shows syntax highlighting and a status bar at the bottom.

```
1 #region Assembly netstandard, Version=2.0.0.0, Culture=neutral, PublicKeyToken=cc7b13ffcd2ddd51
2 // netstandard.dll
3 #endregion
4
5 namespace System
6 {
7     public class Object
8     {
9         public Object();
10
11         ~Object();
12
13         public static bool Equals(Object objA, Object objB);
14         public static bool ReferenceEquals(Object objA, Object objB);
15         public virtual bool Equals(Object obj);
16         public virtual int GetHashCode();
17         public Type GetType();
18         public virtual string ToString();
19         protected Object MemberwiseClone();
20     }
21 }
```



A screenshot of the SharpPad code editor showing the `Math.cs` file. The code defines the `Math` class in the `System` namespace. It contains constants for the mathematical base `e` and the ratio of circumference to diameter `PI`. The code editor interface shows syntax highlighting and a status bar at the bottom.

```
1 #region Assembly System.Runtime.Extensions, Version=4.2.1.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a
2 // System.Runtime.Extensions.dll
3 #endregion
4
5 namespace System
6 {
7     /**
8      * Provides constants and static methods for trigonometric, logarithmic, and other
9      * common mathematical functions.
10     */
11     public static class Math
12     {
13         /**
14          * Summary:
15          *     Represents the natural logarithmic base, specified by the constant, e.
16          */
17         public const double E = 2.7182818284590451;
18
19         /**
20          * Summary:
21          *     Represents the ratio of the circumference of a circle to its diameter, specified
22          *     by the constant, π.
23          */
24         public const double PI = 3.1415926535897931;
25     }
26 }
```

Program.cs — Chapter05 (Workspace)

EXPLORER OPEN EDITORS CHAPTER05 (WORKSPACE)

Program.cs Person.cs

```
139 // Defining and passing parameters to methods
140
141
142
143
144
```

PeopleApp > Program.cs > {} PeopleApp > PeopleApp.Program > Main(string[] args)

```
139 // Defining and passing parameters to methods
140
141
142
143
144
```

WriteLine(bob.SayHello()) string Person.SayHelloTo(string name)
WriteLine(bob.SayHello("Emily"));

Ln 143, Col 32 Spaces: 2 UTF-8 with BOM CRLF C# SharpPad:5255

Program.cs — Chapter05 (Workspace)

EXPLORER OPEN EDITORS CHAPTER05 (WORKSPACE)

Program.cs Person.cs

```
139 // Defining and passing parameters to methods
140
141
142
143
144
```

PeopleApp > Program.cs > {} PeopleApp > PeopleApp.Program > Main(string[] args)

```
139 // Defining and passing parameters to methods
140
141
142
143
144
```

string Person.SayHello(string name)
2/2
WriteLine(bob.SayHello("Emily"));

Ln 143, Col 30 Spaces: 2 UTF-8 with BOM CRLF C# SharpPad:5255

Program.cs — Chapter05 (Workspace)

EXPLORER OPEN EDITORS CHAPTER05 (WORKSPACE)

Program.cs Person.cs

```
144
145
146
147
148
```

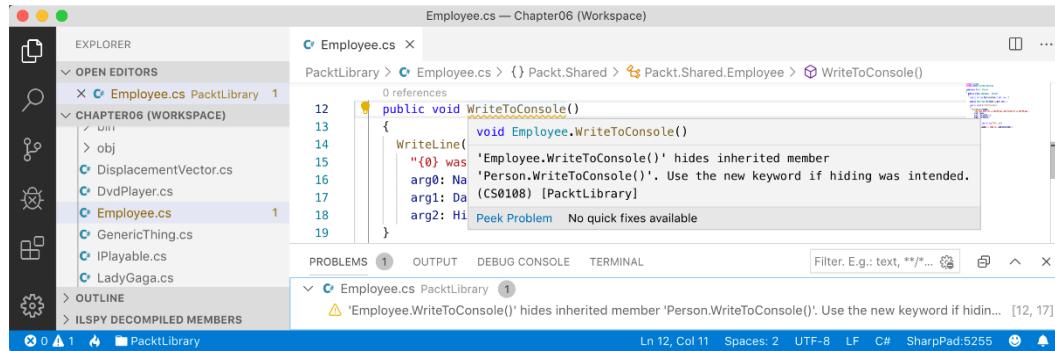
PeopleApp > Program.cs > {} PeopleApp > PeopleApp.Program > Main(string[] args)

```
144
145
146
147
148
```

string Person.OptionalParameters(string command = "Run!",
double number = 0, bool active = true)
WriteLine(bob.OptionalParameters());

Ln 147, Col 40 Spaces: 2 UTF-8 with BOM CRLF C# SharpPad:5255

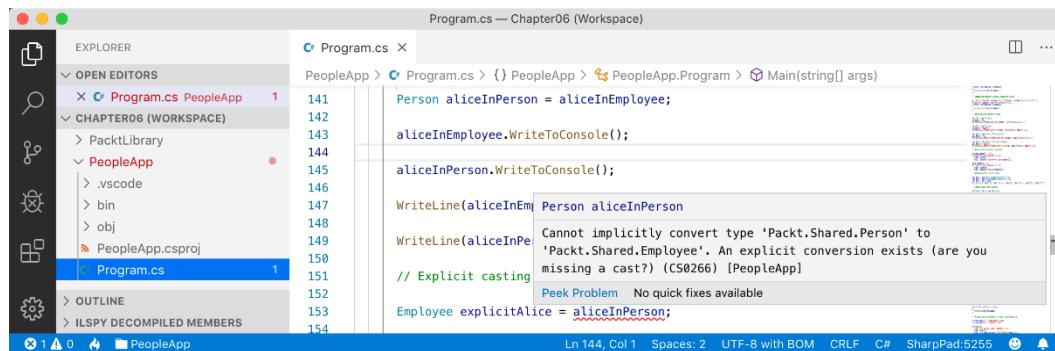
Chapter 6: Implementing Interfaces and Inheriting Classes



The screenshot shows the SharpPad IDE interface with the file `Employee.cs` open. A tooltip is displayed over the line of code `public void WriteToConsole()`. The tooltip contains the following text:

```
'{}' was 'Employee.WriteToConsole()' hides inherited member  
'Person.WriteToConsole()'. Use the new keyword if hiding was intended.  
(CS0108) [PacktLibrary]
```

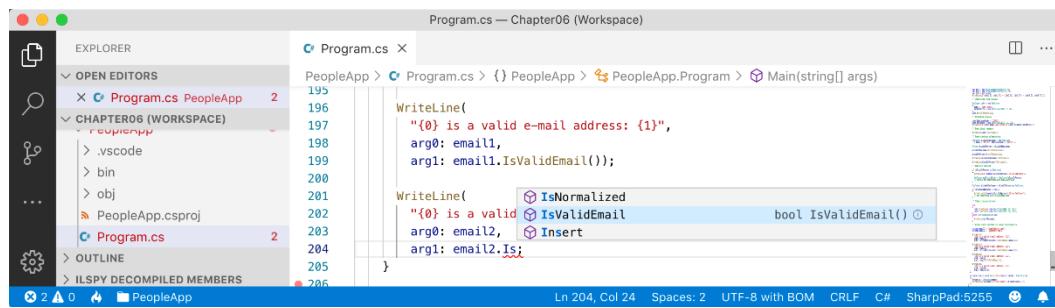
The tooltip also includes a "Peek Problem" link and a note that there are no quick fixes available.



The screenshot shows the SharpPad IDE interface with the file `Program.cs` open. A tooltip is displayed over the line of code `Person aliceInPerson = aliceInEmployee;`. The tooltip contains the following text:

```
Cannot implicitly convert type 'Packt.Shared.Person' to  
'Packt.Shared.Employee'. An explicit conversion exists (are you  
missing a cast?) (CS0266) [PeopleApp]
```

The tooltip also includes a "Peek Problem" link and a note that there are no quick fixes available.

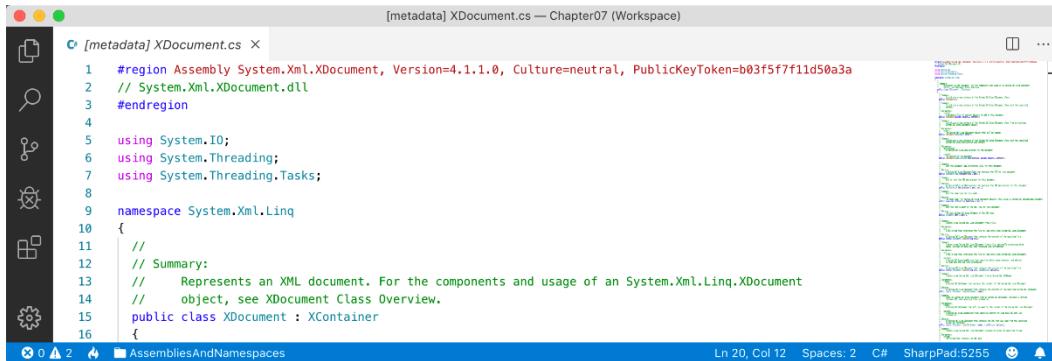


The screenshot shows the SharpPad IDE interface with the file `Program.cs` open. A tooltip is displayed over the line of code `bool IsValidEmail()`. The tooltip contains the following text:

```
'{}' is a valid IsNormalized  
'{}' is a valid IsValidEmail bool IsValidEmail() Insert  
arg0: email1,  
arg1: email1.IsValidEmail()
```

The tooltip also includes a "Peek Problem" link and a note that there are no quick fixes available.

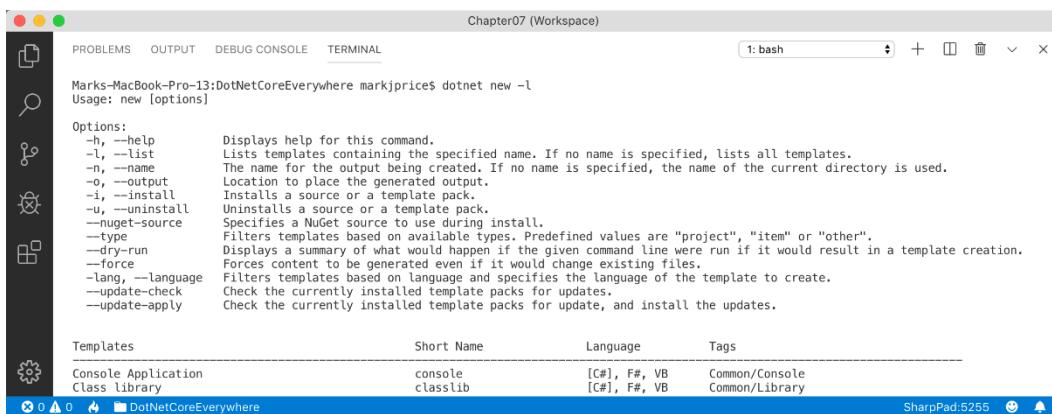
Chapter 7: Understanding and Packaging .NET Types



The screenshot shows the SharpPad code editor with the file `XDocument.cs` open. The code is the metadata for the `XDocument` class, which represents an XML document. The editor interface includes a toolbar on the left, a status bar at the bottom, and a sidebar on the right showing a tree view of the project structure.

```
[metadata] XDocument.cs — Chapter07 (Workspace)
C [metadata] XDocument.cs X
1 #region Assembly System.Xml.XDocument, Version=4.1.1.0, Culture=neutral, PublicKeyToken=b03f5f7f11d50a3a
2 // System.Xml.XDocument.dll
3 #endregion
4
5 using System.IO;
6 using System.Threading;
7 using System.Threading.Tasks;
8
9 namespace System.Xml.Linq
10 {
11     //
12     // Summary:
13     //   Represents an XML document. For the components and usage of an System.Xml.Linq.XDocument
14     //   object, see XDocument Class Overview.
15     public class XDocument : XContainer
16 }
```

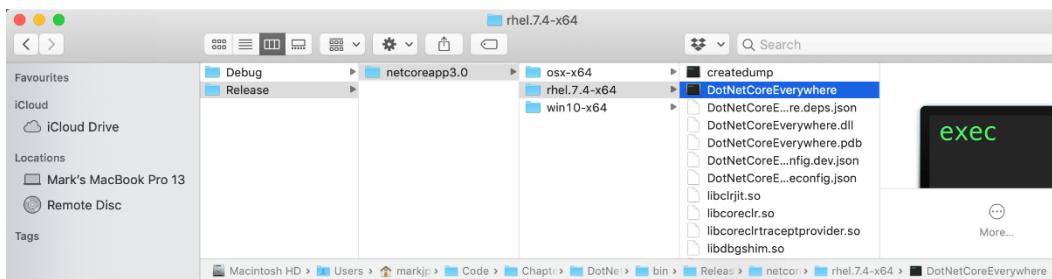
Ln 20, Col 12 Spaces: 2 C# SharpPad:5255



The screenshot shows a terminal window titled "Chapter07 (Workspace)" with the command `dotnet new --help` run. It displays the usage information and a detailed list of command-line options for creating new projects.

```
Marks-MacBook-Pro-13:DotNetCoreEverywhere markjprice$ dotnet new --help
Usage: new [options]

Options:
-h, --help           Displays help for this command.
-l, --list            Lists templates containing the specified name. If no name is specified, lists all templates.
-n, --name            The name for the output being created. If no name is specified, the name of the current directory is used.
-o, --output          Location to place the generated output.
-i, --install         Installs a source or a template pack.
-u, --uninstall       Uninstalls a source or a template pack.
--nuget-source        Specifies a NuGet source to use during install.
--type                Filters templates based on available types. Predefined values are "project", "item" or "other".
--dry-run             Displays a summary of what would happen if the given command line were run if it would result in a template creation.
--force               Forces content to be generated even if it would change existing files.
--lang, --language    Filters templates based on language and specifies the language of the template to create.
--update-check        Check the currently installed template packs for updates.
--update-apply        Check the currently installed template packs for update, and install the updates.
```



The screenshot shows the ILSPY IDE interface. On the left is the Explorer sidebar with sections for OPEN EDITORS, CHAPTER07 (WORKSPACE), and ILSPY DECOMPILED MEMBERS. The ILSPY DECOMPILED MEMBERS section is expanded, showing a tree view of the System.IO namespace, with 'Directory' selected. The main area contains two code editors: 'ilspy-decompilation.cs' on the left and 'ilspy-decompilation.il' on the right. The cs file shows C# code for the Directory class, and the il file shows the corresponding Microsoft Intermediate Language (MSIL) code. The status bar at the bottom indicates 'Ln 41, Col 1' and 'SharpPad:5255'.

```
// /Users/markjprice/Code/Chapter07/Decompiled/CHAPTER07/ILSPY DECOMPILED MEMBERS
ilspy-decompilation.cs
ilspy-decompilation.il
```

This screenshot is identical to the one above, showing the ILSPY IDE interface with the 'Directory' class selected in the decompiled members tree. The cs and il files are displayed in the main pane, and the status bar shows 'Ln 375, Col 1' and 'SharpPad:5255'.

```
ilspy-decompilation.cs
ilspy-decompilation.il
```

nuget Packages Upload Statistics Documentation Downloads Blog markprice

Search for packages... 

ⓘ You successfully uploaded Packt.CS8.SharedLibrary 1.0.0.

 Packt.CS8.SharedLibrary 1.0.0

Three extension methods to validate a string value.

⚠ This package has not been published yet. It will appear in search results and will be available for install/restore after both validation and indexing are complete. Package validation and indexing may take up to an hour. [Read more](#).

⚠ The package icon will become available after this package is indexed.

Info

⌚ last updated a few seconds ago

🌐 Project Site

📄 License: MS-PL

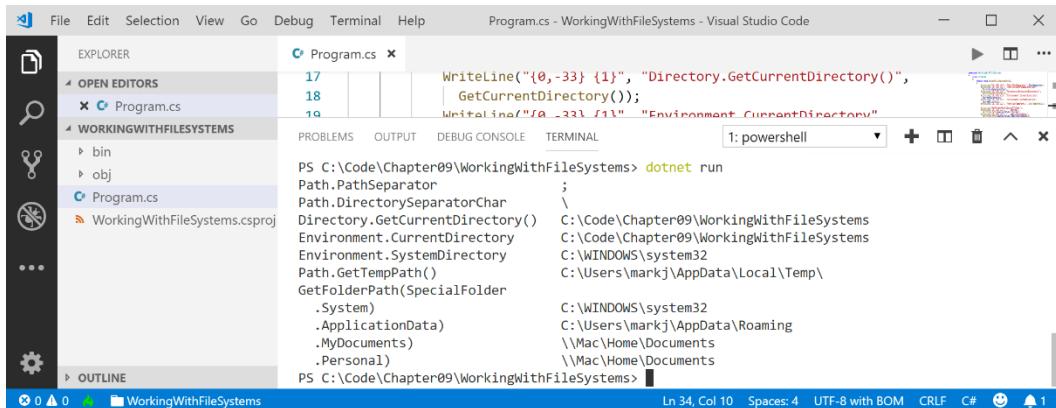
✉️ Contact owners

❓ Contact support

Chapter 8: Working with Common .NET Types

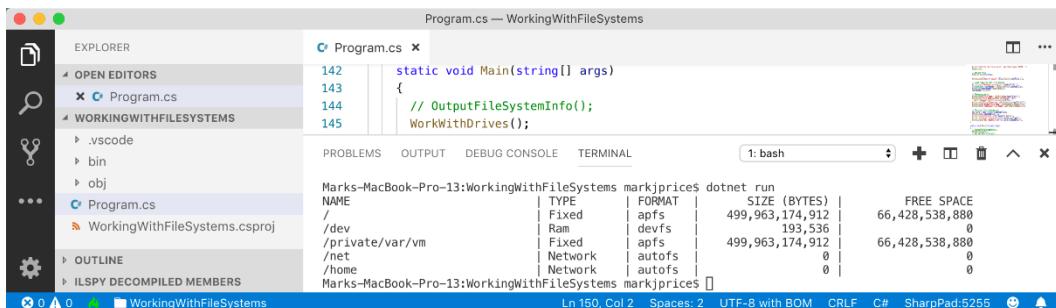


Chapter 9: Working with Files, Streams, and Serialization



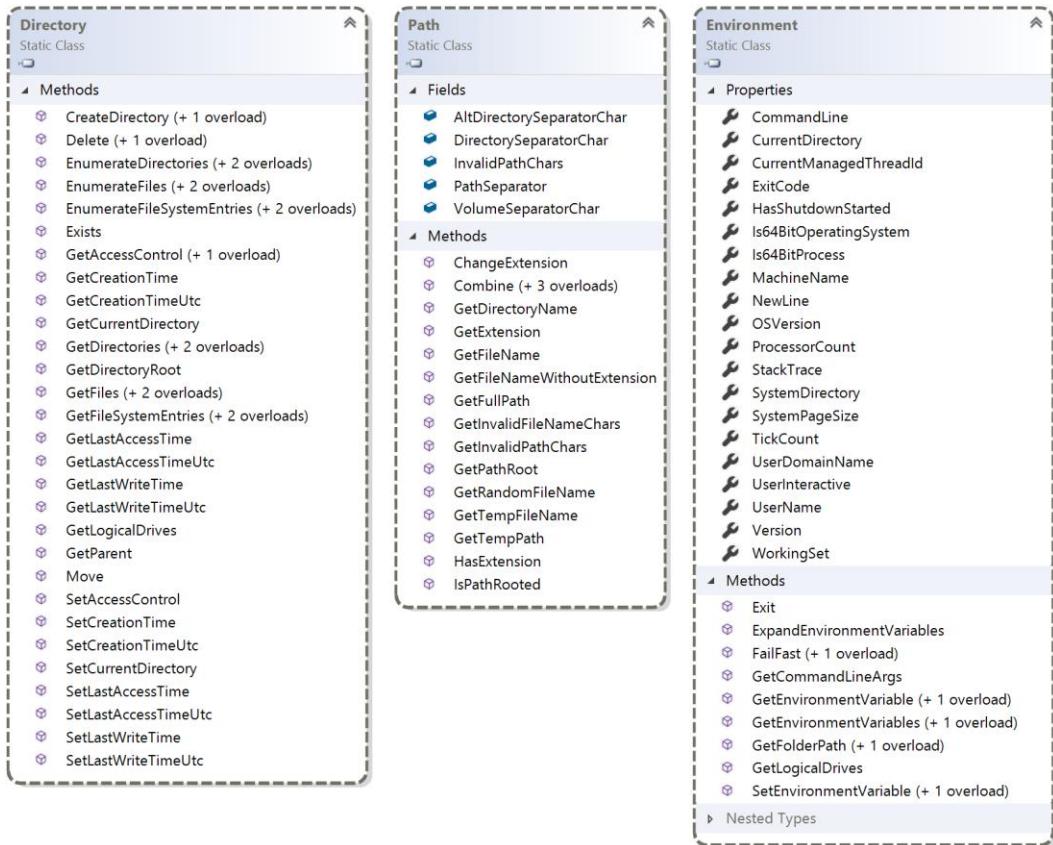
A screenshot of Visual Studio Code showing a C# file named Program.cs. The code prints the current directory and environment variables. The terminal shows the output of running the program with dotnet run, displaying the system's file paths for various drives and locations.

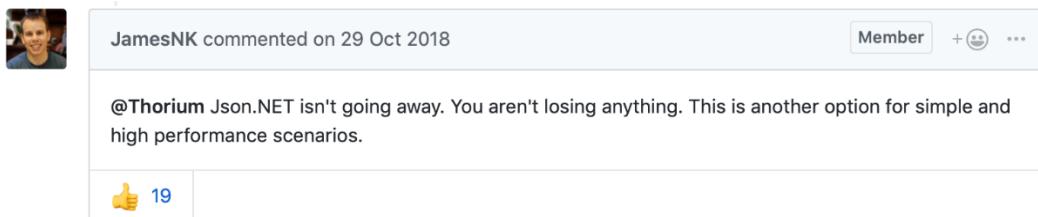
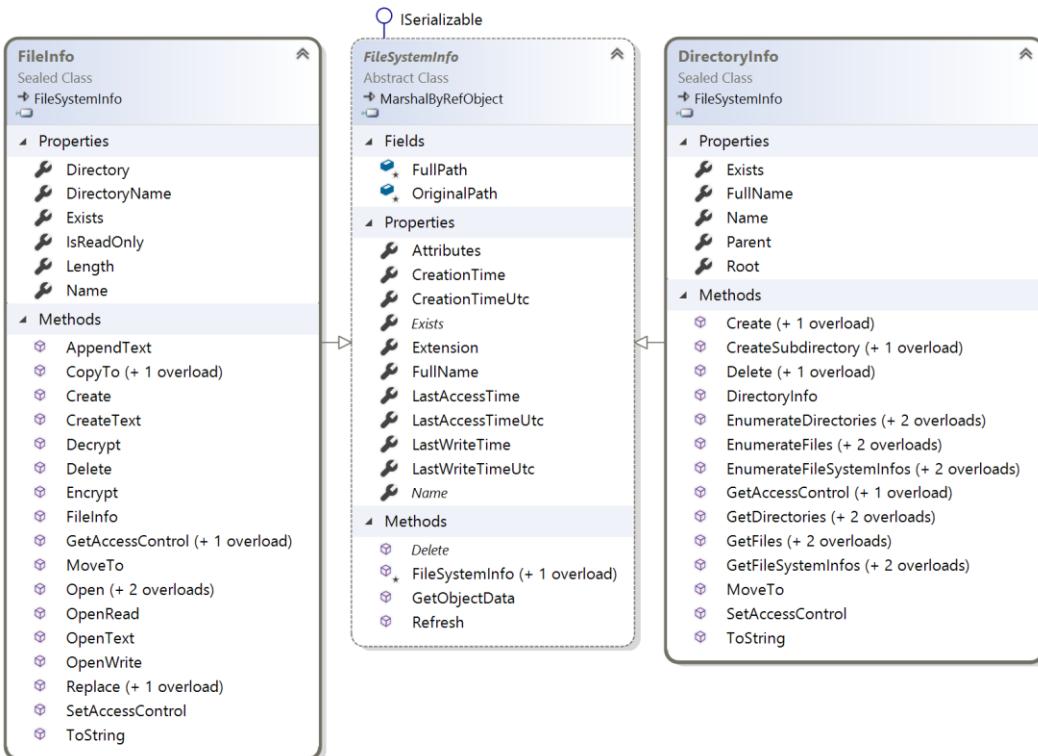
```
17    WriteLine("{0,-33} {1}", "Directory.GetCurrentDirectory()",  
18    GetCurrentDirectory());  
19    WriteLine("{0,-33} {1}" "Environment.CurrentDirectory"  
PS C:\Code\Chapter09\WorkingWithFileSystems> dotnet run  
Path.PathSeparator ;  
Path.DirectorySeparatorChar \  
Directory.GetCurrentDirectory() C:\Code\Chapter09\WorkingWithFileSystems  
Environment.CurrentDirectory C:\Code\Chapter09\WorkingWithFileSystems  
Environment.SystemDirectory C:\WINDOWS\system32  
Path.GetTempPath() C:\Users\markj\AppData\Local\Temp\  
GetFolderPath(SpecialFolder .System) C:\WINDOWS\system32  
.ApplicationData) C:\Users\markj\AppData\Roaming  
.MyDocuments) \\Mac\Home\Documents  
.Personal) \\Mac\Home\Documents  
PS C:\Code\Chapter09\WorkingWithFileSystems>
```



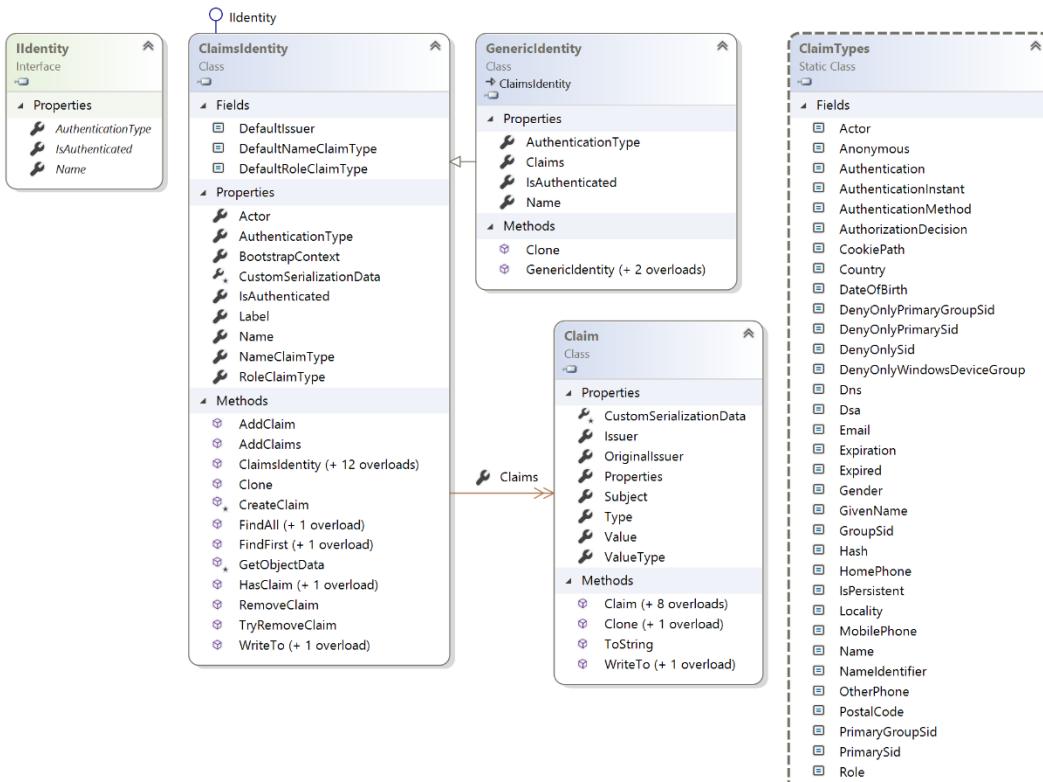
A screenshot of Visual Studio Code showing a C# file named Program.cs. The code uses System.IO.DriveInfo to print disk usage information. The terminal shows the output of running the program with dotnet run, displaying a table of disk drives with their type, format, size, and free space.

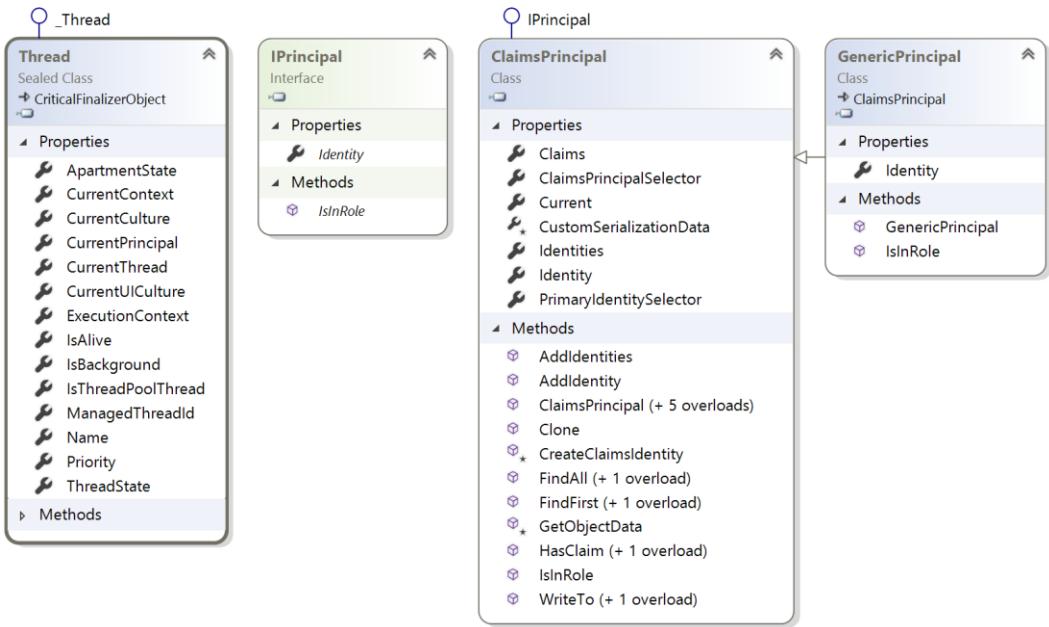
| NAME | TYPE | FORMAT | SIZE (BYTES) | FREE SPACE |
|-----------------|---------|--------|-----------------|----------------|
| / | Fixed | apfs | 499,963,174,912 | 66,428,538,880 |
| /dev | Raw | derf | 193,536 | 0 |
| /private/var/vm | Fixed | apfs | 499,963,174,912 | 66,428,538,880 |
| /net | Network | autofs | 0 | 0 |
| /home | Network | autofs | 0 | 0 |



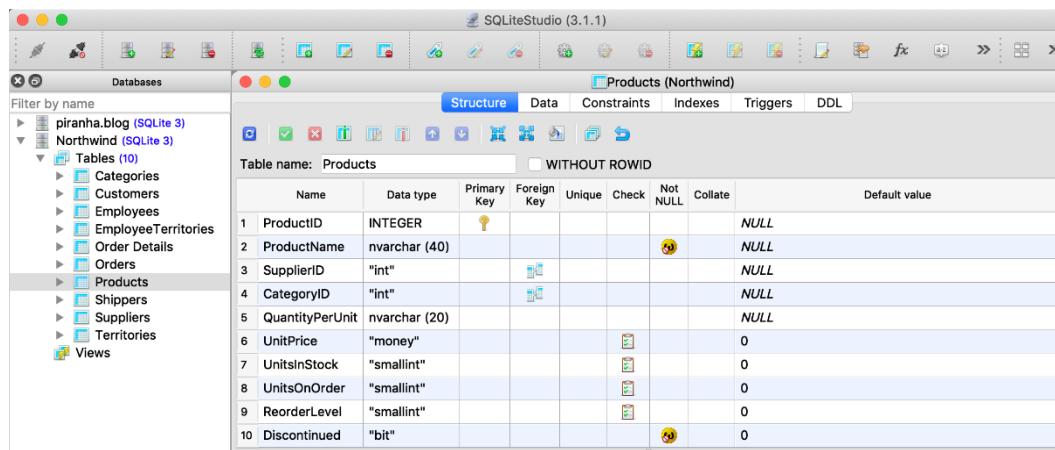
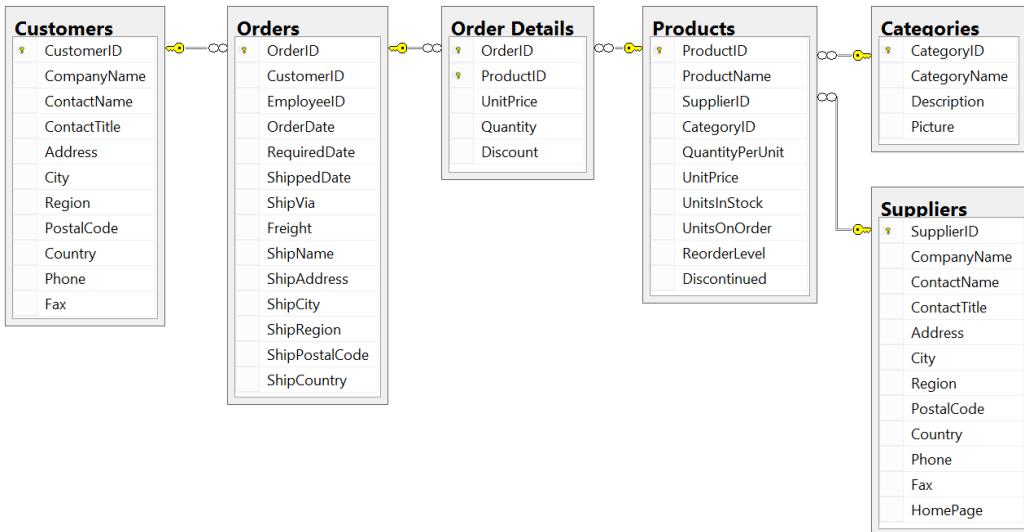


Chapter 10: Protecting Your Data and Applications





Chapter 11: Working with Databases Using Entity Framework Core



Databases

Filter by name

- piranha.blog (SQLite 3)
- Northwind (SQLite 3)
 - Tables (10)
 - Categories
 - Customers
 - Employees
 - EmployeeTerritories
 - Order Details
 - Orders
 - Products

Products (Northwind)

Structure Data Constraints Indexes Triggers DDL

Grid view Form view

Filter data Total rows loaded: 77

| ProductID | ProductName | SupplierID | CategoryID | QuantityPerUnit | UnitPrice | UnitsInStock | UnitsOnOrder |
|-----------|------------------------------|------------|------------|---------------------|-----------|--------------|--------------|
| 1 | Chai | 1 | 1 | 10 boxes x 20 bags | 18 | 39 | 0 |
| 2 | Chang | 1 | 1 | 24 - 12 oz bottles | 19 | 17 | 40 |
| 3 | Aniseed Syrup | 1 | 2 | 12 - 550 ml bottles | 10 | 13 | 70 |
| 4 | Chef Anton's Cajun Seasoning | 2 | 2 | 48 - 6 oz jars | 22 | 53 | 0 |
| 5 | Chef Anton's Gumbo Mix | 2 | 2 | 36 boxes | 21.35 | 0 | 0 |

Databases

Filter by name

- piranha.blog (SQLite 3)
- Northwind (SQLite 3)
 - Tables (10)
 - Categories
 - Customers
 - Employees
 - EmployeeTerritories
 - Order Details
 - Orders
 - Products
 - Shippers

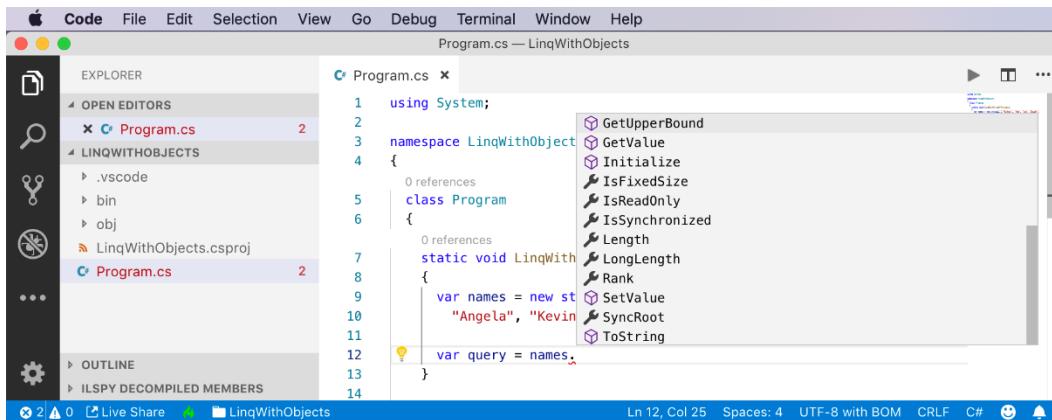
Categories (Northwind)

Structure Data Constraints Indexes Triggers DDL

Table name: Categories WITHOUT ROWID

| Name | Data type | Primary Key | Foreign Key | Unique | Check | Not NULL | Collate | Default value |
|----------------|---------------|-------------|-------------|--------|-------|----------|---------|---------------|
| 1 CategoryID | INTEGER | ! | | | | | | NULL |
| 2 CategoryName | nvarchar (15) | | | | ! | | | NULL |
| 3 Description | "text" | | | | | | | NULL |
| 4 Picture | "image" | | | | | | | NULL |

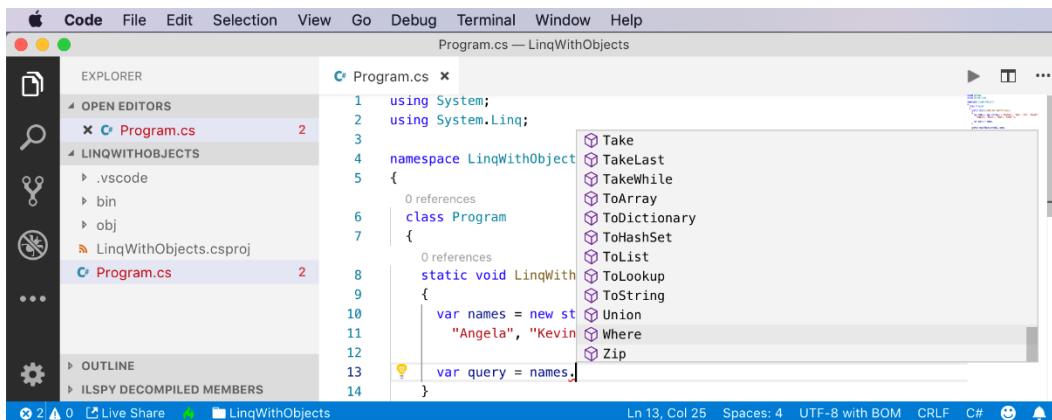
Chapter 12: Querying and Manipulating Data Using LINQ



A screenshot of a code editor (VS Code) showing a tooltip for the variable 'names'. The code is as follows:

```
1  using System;
2
3  namespace LinqWithObject
4  {
5      class Program
6      {
7          static void LinqWith
8          {
9              var names = new st
10             "Angela", "Kevin"
11
12             var query = names.
13         }
14     }
```

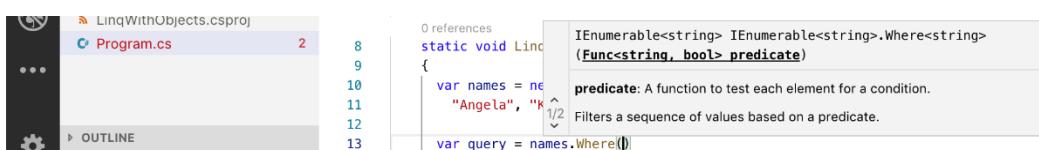
The tooltip lists several methods available on the `IEnumerable<string>` interface, including `GetUpperBound`, `GetValue`, `Initialize`, `IsFixedSize`, `IsReadOnly`, `IsSynchronized`, `Length`, `LongLength`, `Rank`, `SetValue`, `SyncRoot`, and `ToString`.



A screenshot of a code editor (VS Code) showing a tooltip for the variable 'names'. The code is as follows:

```
1  using System;
2  using System.Linq;
3
4  namespace LinqWithObject
5  {
6      class Program
7      {
8          static void LinqWith
9          {
10             var names = new st
11             "Angela", "Kevin"
12
13             var query = names.
14         }
15     }
```

The tooltip lists several methods available on the `IEnumerable<string>` interface, including `Take`, `TakeLast`, `TakeWhile`, `ToArray`, `ToDictionary`, `ToHashSet`, `ToList`, `ToLookup`, `ToString`, `Union`, `Where`, and `Zip`.

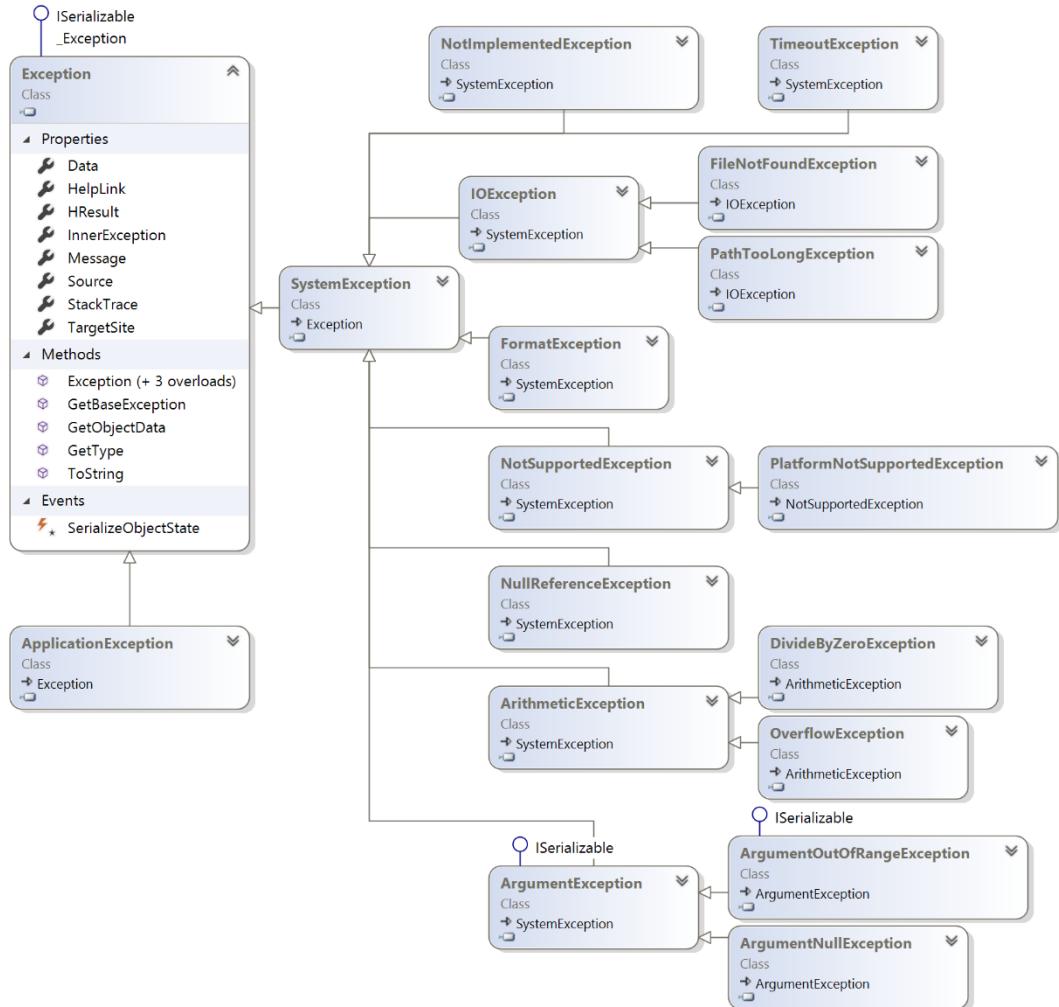


A screenshot of a code editor (VS Code) showing a tooltip for the `Where` method call in the LINQ query. The code is as follows:

```
8  static void Linq
9  {
10    var names = ne
11    "Angela", "K
12
13    var query = names.
14 }
```

The tooltip provides the following information:

- Method Signature:** `IEnumerable<string> IEnumerable<string>.Where<string>(Func<string, bool> predicate)`
- predicate:** A function to test each element for a condition.
- Description:** Filters a sequence of values based on a predicate.



Code File Edit Selection View Go Debug Terminal Window Help

Program.cs — LINQinParallel

Program.cs

```
1  using System;
2  using static System.Console;
3  using System.Diagnostics;
4  using System.Collections.Generic;
5  using System.Linq;
6
7  namespace LINQinParallel
8  {
9      0 references
10     class Program
11     {
12         0 references
13         static void Main(string[] args)
14         {
15             var watch = Stopwatch.StartNew();
16             WriteLine("Press ENTER to start: ");
17             ReadLine();
18             watch.Stop();
19             WriteLine("{0:#,##0} elapsed milliseconds.",
20             watch.ElapsedMilliseconds);
21         }
22     }
23 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: bash

Marks-MacBook-Pro-13:LINQinParallel markjprices dotnet run
Press ENTER to start:
173,689 elapsed milliseconds.
Marks-MacBook-Pro-13:LINQinParallel markjprices

CPU History

Code File Edit Selection View Go Debug Terminal Window Help

Program.cs — LINQinParallel

Program.cs

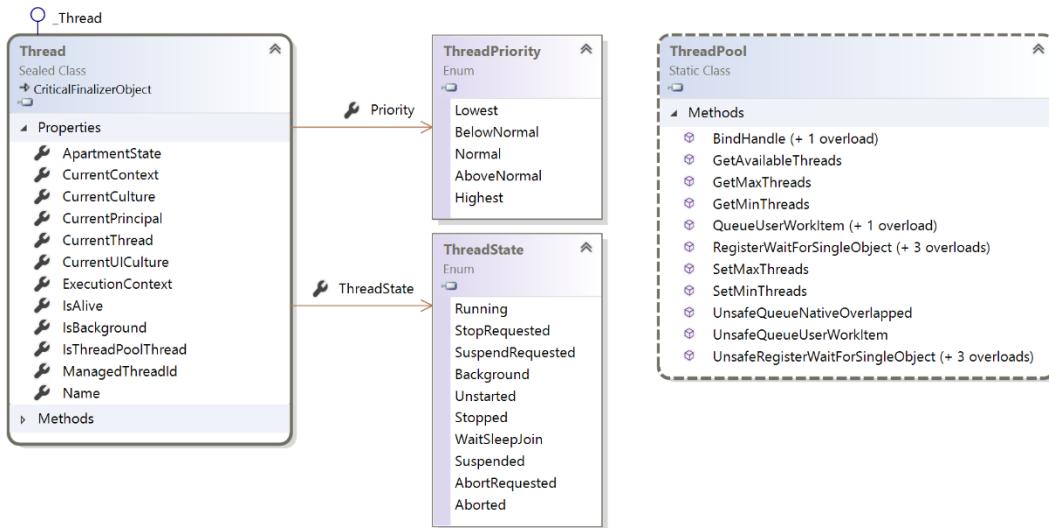
```
13  var watch = Stopwatch.StartNew();
14  Write("Press ENTER to start: ");
15  ReadLine();
16  watch.Start();
17
18  IEnumerable<int> numbers = Enumerable.Range(1, 200_000_000);
19
20  // var squares = numbers
21  //   .Select(number => number * 2).ToArray();
22
23  var squares = numbers.AsParallel()
24    .Select(number => number * 2).ToArray();
25
26  watch.Stop();
27  WriteLine("{0:#,##0} elapsed milliseconds.",
28  watch.ElapsedMilliseconds);
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: bash

Marks-MacBook-Pro-13:LINQinParallel markjprice\$ dotnet run
Press ENTER to start:
173,689 elapsed milliseconds.
Marks-MacBook-Pro-13:LINQinParallel markjprice\$ dotnet run
Press ENTER to start:
145,904 elapsed milliseconds.
Marks-MacBook-Pro-13:LINQinParallel markjprices

CPU History

Chapter 13: Improving Performance and Scalability Using Multitasking

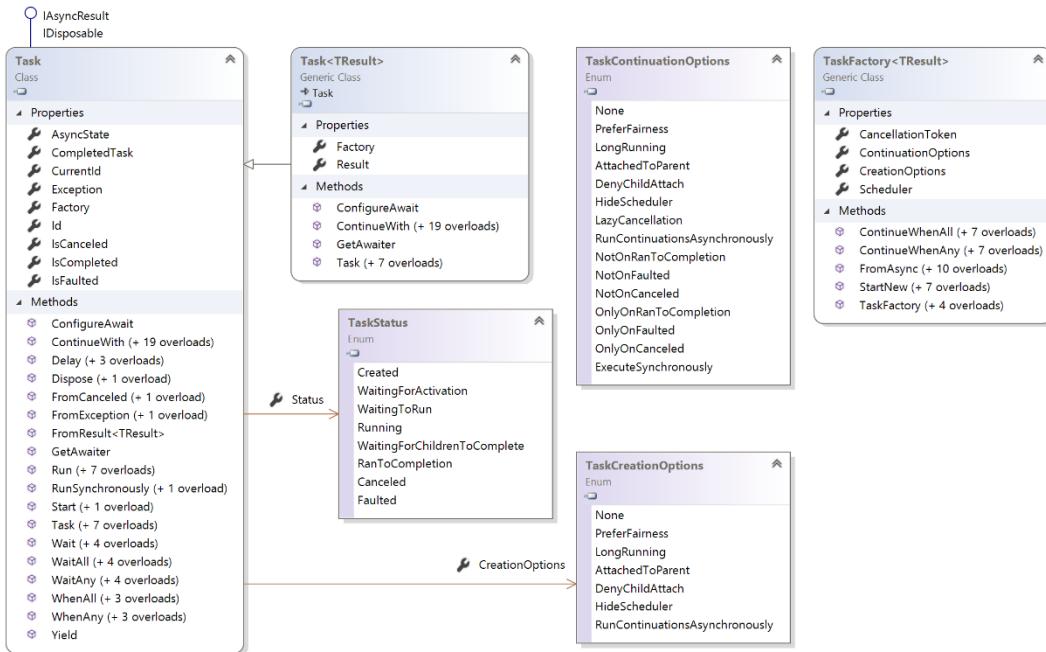


Carl T. Bergstrom @CT_Bergstrom · Dec 17

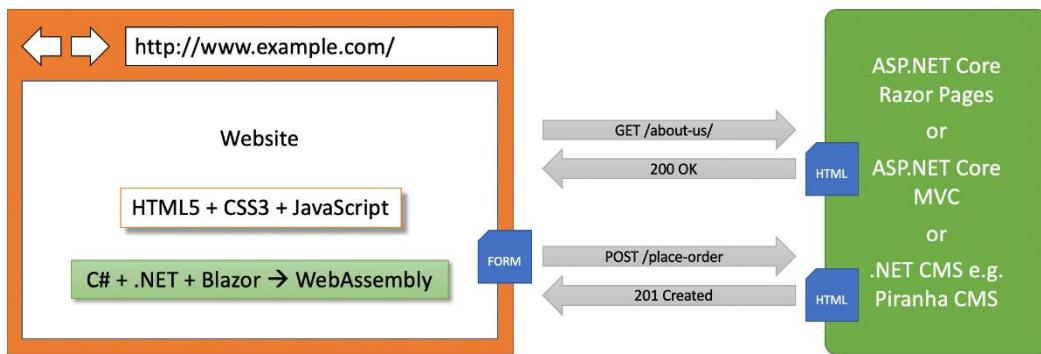
My son clearly has a better grasp on the real world than his teacher does.

8. If 6 workers can make a car in 90 hours, how long would it take 12 workers to make the same car?

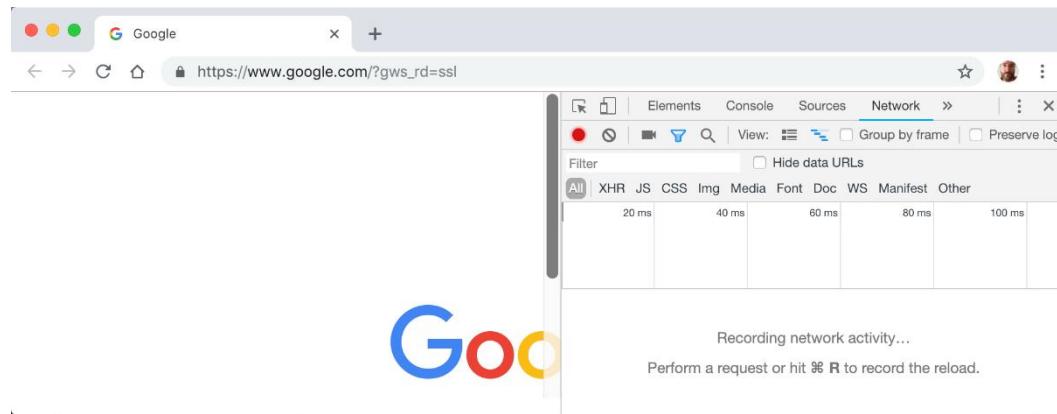
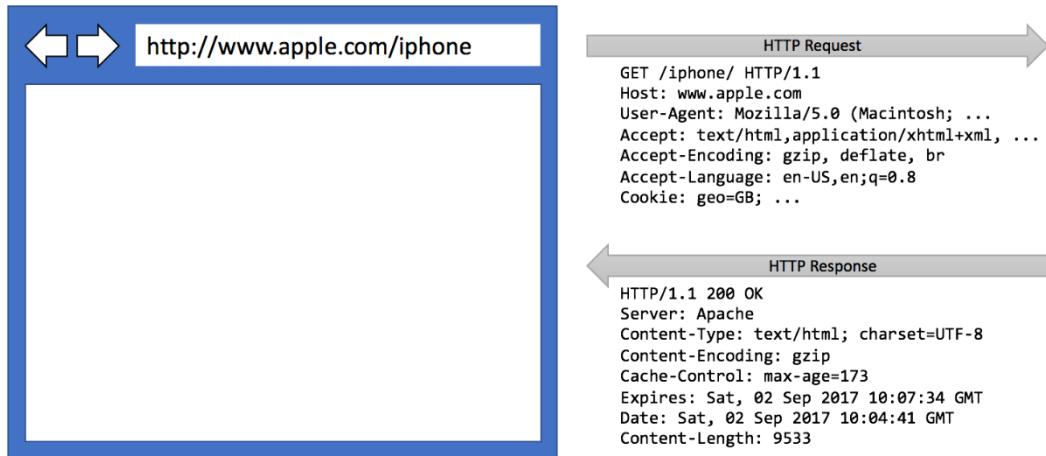
- (A) 12 hours
- (B) 25 hours
- (C) 30 hours
- (D) 45 hours
- (E) 180 hours



Chapter 14: Practical Applications of C# and .NET



Chapter 15: Building Websites Using ASP.NET Core Razor Pages



Learn ASP.NET

Popular learning materials

| Name | Status | Type | Initiator | Size | Time |
|--------------------|----------|------------|-----------|---------|--------|
| web | 200 | document | Other | 11.1 KB | 215 ms |
| autocomplete... | (can...) | stylesheet | web | 0 B | 213 ms |
| b9-c4ba2c?v=... | 200 | stylesheet | web | 21.9 KB | 94 ms |
| override.css?c=... | 200 | stylesheet | web | 907 B | 48 ms |
| jquery-ui.min.c... | 200 | stylesheet | web | 9.4 KB | 222 ms |
| fabric.compon... | 200 | stylesheet | web | 14.9 KB | 56 ms |
| bootstrap-cust... | 200 | stylesheet | web | 40.9 KB | 310 ms |
| RE1Mu3b?v=... | 200 | png | web | 4.4 KB | 58 ms |
| aspnet-core-b... | 200 | png | web | 164 KB | 340 ms |
| general.min.js... | 200 | script | web | 70.0 KB | 325 ms |
| main.min.js?v=... | 200 | script | web | 9.0 KB | 192 ms |
| 18-d72137v... | 200 | script | web | 33.8 KB | 95 ms |
| jquery-ui.min.j... | 200 | script | web | 89.6 KB | 434 ms |
| learn-content... | 200 | script | web | 1000 B | 202 ms |

38 requests | 996 KB transferred | 2.0 MB resources | Finish: 17.27 s | DOMContentLoaded: 1.

Learn ASP.NET

Popular learning materials

ASP.NET Core - Beginner

First video course in a set of three on Microsoft Virtual Academy about the basics of ASP.NET Core: where to get it, how to install it, how to use it, and more.

| Name | Headers | Preview | Response | Cookies | Timing |
|-------------------------|--|---------|----------|---------|--------|
| General | | | | | |
| Request URL: | https://dotnet.microsoft.com/learn/web | | | | |
| Request Method: | GET | | | | |
| Status Code: | 200 | | | | |
| Remote Address: | 52.160.40.218:443 | | | | |
| Referrer Policy: | no-referrer-when-downgrade | | | | |
| Response Headers | | | | | |
| content-encoding: | gzip | | | | |
| content-type: | text/html; charset=utf-8 | | | | |
| date: | Sat, 03 Aug 2019 07:47:00 GMT | | | | |
| request-context: | appId=cid-v1:109ce76-ff6c-4be0-97b5-4f02dbac2451 | | | | |
| server: | Kestrel | | | | |
| status: | 200 | | | | |
| vary: | Accept-Encoding | | | | |
| x-content-type-options: | nosniff | | | | |
| x-powered-by: | ASP.NET | | | | |
| Request Headers | | | | | |
| :authority: | dotnet.microsoft.com | | | | |
| :method: | GET | | | | |
| :path: | /learn/web | | | | |
| :scheme: | https | | | | |
| accept: | text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3 | | | | |
| accept-encoding: | gzip, deflate, br | | | | |
| accept-language: | en-US,en;q=0.9 | | | | |

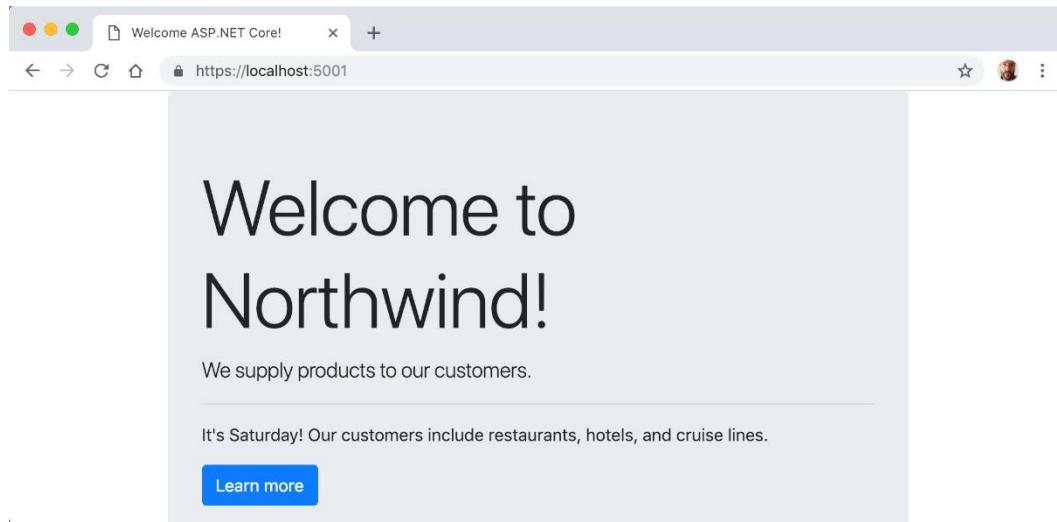
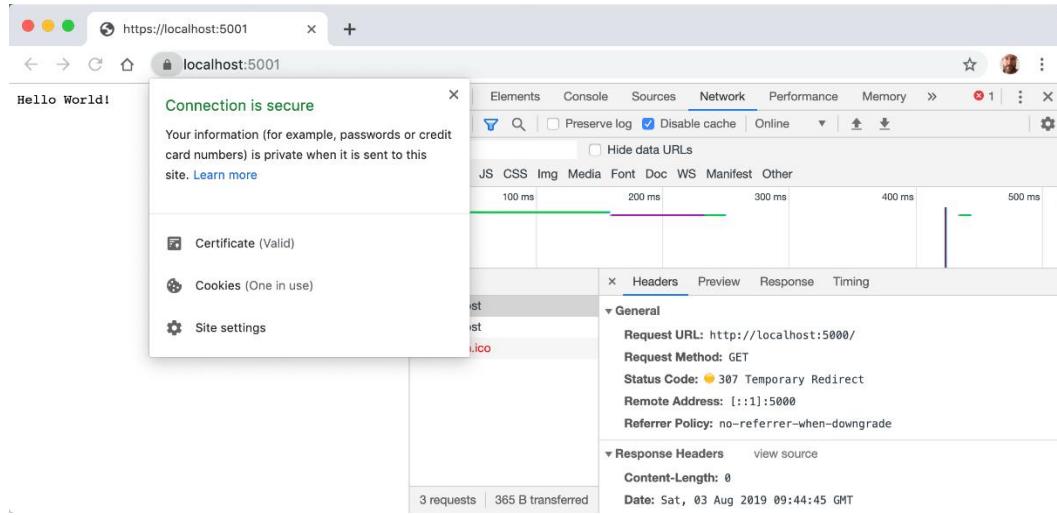
38 requests | 996 KB transferred

A screenshot of a browser window showing a successful network request. The address bar shows 'localhost:5000'. The main content area displays 'Hello World!'. The developer tools Network tab is open, showing a single request to 'localhost' with a status code of 200 OK. The timing bar indicates a total duration of 100 ms.

| Name | Status | Type | Initiator | Size | Time |
|-----------|--------|------|-----------|-------------------|--------|
| localhost | 200 | JS | localhost | 123 B transferred | 100 ms |

A screenshot of a browser window showing a privacy error. The address bar shows 'localhost:5001'. The main content area displays a red exclamation mark icon and the text 'Your connection is not private'. It warns that attackers might try to steal information from 'localhost'. A blue button at the bottom says 'Back to safety'. The developer tools Network tab is open, showing three failed requests to 'localhost' with status codes 200 and 404. The timing bar indicates a total duration of 6000 ms.

| Name | Status | Type | Initiator | Size | Time |
|---|----------|----------|----------------------------------|----------------|-------|
| data:image/png;base64,iVBORw0KGgoAAA... | 200 | png | chrome-extension://.../image.png | (memory cache) | 0 ms |
| localhost | (failed) | document | Other | 0 B | 53 ms |
| localhost | (failed) | document | Other | 0 B | 74 ms |



Northwind Web Site - Suppliers

https://localhost:5001/suppliers

Suppliers

Company Name

Alpha Co

Beta Limited

Gamma Corp

Copyright © 2019 - Northwind Web Site - Suppliers

Northwind Web Site - Suppliers

https://localhost:5001/suppliers

Suppliers

Company Name

Aux joyeux ecclésiastiques

Bigfoot Breweries

Cooperativa de Quesos 'Las Cabras'

Escargots Nouveaux

Exotic Liquids

The screenshot shows a web browser window with the title "Northwind Web Site - Suppliers". The URL in the address bar is <https://localhost:5001/suppliers>. The page displays a list of suppliers with horizontal lines separating them:

- Refrescos Americanas LTDA
- Specialty Biscuits, Ltd.
- Svensk Sjöföda AB
- Tokyo Traders
- Zaanse Snoepfabriek

Below the list is a form for adding a new supplier:

Enter a name for a new supplier:

At the bottom of the page, the copyright notice "Copyright © 2019 - Northwind Web Site - Suppliers" is visible.

The screenshot shows a web browser window with the title "localhost:5001/packtfeatures/employees". The URL in the address bar is <https://localhost:5001/packtfeatures/employees>. The page has a large header "Employees". Below the header are four cards, each representing an employee:

| Nancy Davolio | Andrew Fuller | Janet Leverling | Margaret Peacock |
|--|---|--|--|
| USA Education includes a BA in psychology from Colorado State University in 1970. She also completed "The Art of the Cold Call." Nancy is a member of Toastmasters International | USA Andrew received his BTS commercial in 1974 and a Ph.D. in international marketing from the University of Dallas in 1981. He is fluent in French and Italian and reads German. He joined the | USA Janet has a BS degree in chemistry from Boston College (1984). She has also completed a certificate program in food retailing management. Janet was hired as a sales associate in 1991 | USA Margaret holds a BA in English literature from Concordia College (1958) and an MA from the American Institute of Culinary Arts (1966). She was assigned to the London office |

Chapter 16: Building Websites Using the Model-View-Controller Pattern

The screenshot shows a browser window titled "Home Page - NorthwindMvc" at "localhost:5001". The main content area displays a "Welcome" message and a link to "Learn about building Web apps with ASP.NET Core.". The top navigation bar includes links for "NorthwindMvc", "Home", "Privacy", "Register", and "Login". On the right side of the browser, the developer tools Network tab is open, showing a list of requests. The table has columns for Name, Status, Type, Initiator, Size, Time, and Waterfall. Key entries include "localhost" (Status 307), "site.css" (Status 200), "jquery.js" (Status 200), "bootstrap..." (Status 200), "site.js?v=4..." (Status 200), and "bootstrap..." (Status 200). The total transfer size is 703 KB, and there are 702 KB resources.

The screenshot shows a browser window titled "Profile - NorthwindMvc" at "localhost:5001/identity/Account/Manage". The top navigation bar includes links for "NorthwindMvc", "Home", "Privacy", and a user session message "Hello mark@example.com! Logout". The main content area features a heading "Manage your account" and a sub-section "Change your account settings". A sidebar on the left lists "Profile", "Email", "Password", "Two-factor authentication", and "Personal data". The "Profile" section is active and contains fields for "Username" (set to "mark@example.com") and "Phone number" (empty). A green success message box says "Thank you for confirming your email." with a close button. At the bottom is a blue "Save" button. The footer includes a copyright notice "© 2019 - NorthwindMvc" and a "Privacy" link.

The screenshot shows a Mac OS X interface with a Code editor window. The menu bar includes Code, File, Edit, Selection, View, Go, Debug, Terminal, Window, and Help. The title bar says "appsettings.json — PracticalApps (Workspace)". The left sidebar has icons for Explorer, Open Editors, and PracticalApps (Workspace). The Explorer panel shows a project structure for "NorthwindMvc" under "PRACTICALAPPS (WORKSPACE)". The "OPEN EDITORS" section contains "appsettings.json NorthwindMvc" and "appsettings.json". The main editor area displays the following JSON code:

```
1  {
2    "ConnectionStrings": {
3      "DefaultConnection": "DataSource=app.db"
4    },
5    "Logging": {
6      "LogLevel": {
7        "Default": "Information",
8        "Microsoft": "Warning",
9        "Microsoft.Hosting.Lifetime": "Information"
10       }
11    },
12    "AllowedHosts": "*"
13  }
```

The screenshot shows the SQLiteStudio application window titled "SQLiteStudio (3.1.1)". The left sidebar lists databases: "Northwind (SQLite 3)" and "app (SQLite 3)". Under "app (SQLite 3)", the "Tables (8)" section is expanded, showing tables: __EFMigrationsHistory, AspNetRoleClaims, AspNetRoles, AspNetUserClaims, AspNetUserLogins, AspNetUserRoles, AspNetUsers, and AspNetUserTokens. The "Views" section is collapsed. The main pane shows the "AspNetUsers (app)" table with the following data:

| | Id | ail | n | Email | or | tE | oL | zr | dl | PasswordHash | PhoneNumber | oe |
|---|----------|-----|---|------------------|----|----|----|----|----|------------------------------|-------------|----|
| 1 | 5b51c... | 0 | | mark@example.com | 0 | 1 | | | | AQAAAAEACcQAAAEC7XSGM++js... | NULL | 0 |

Home Page - NorthwindMvc

https://localhost:5001

NorthwindMvc Home Privacy Register Login

Grains/Cereals
Breads, crackers, pasta, and cereal

View

Northwind

We have had 730 visitors this month.

Products

- Chai costs £18.00
- Chang costs £19.00
- Aniseed Syrup costs
- Rössle Sauerkraut costs £45.60
- Thüringer Rostbratwurst
- Gnocchi di nonna Alice costs £38.00
- Ravioli Angelo costs

Product Detail - Chang - NorthwindMvc

https://localhost:5001/Home/ProductDetail/2

NorthwindMvc Home Privacy Register Login

Product Detail

Product ID
2

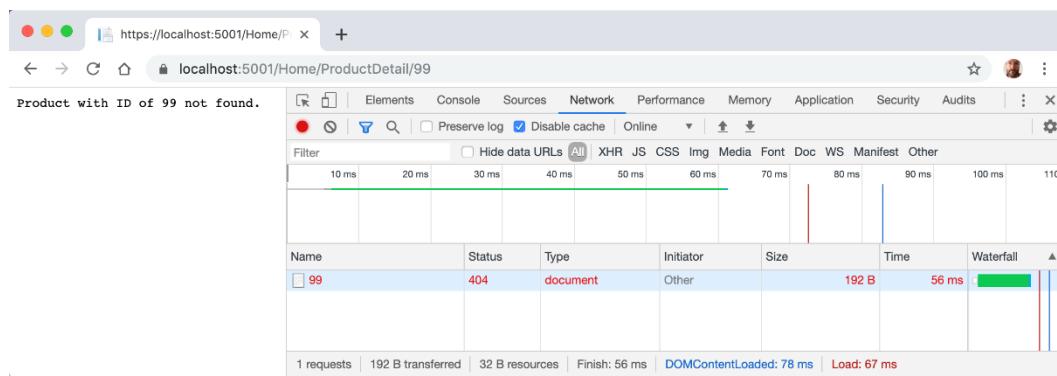
Product Name
Chang

Category ID
1

Unit Price
£19.00

Units In Stock
17

© 2018 - NorthwindMvc - [Privacy](#)



A screenshot of a web browser window titled "Internal Server Error". The URL is "localhost:5001/home/modelbinding". The main content area displays the error message: "An unhandled exception occurred while processing the request." Below it, the text "AmbiguousMatchException: The request matched multiple endpoints. Matches:" is followed by two entries: "NorthwindMvc.Controllers.HomeController.ModelBinding (NorthwindMvc)" and "NorthwindMvc.Controllers.HomeController.ModelBinding (NorthwindMvc)". At the bottom of the error page, there is a navigation bar with tabs: "Stack" (which is selected), "Query", "Cookies", "Headers", and "Routing".

An unhandled exception occurred while processing the request.

AmbiguousMatchException: The request matched multiple endpoints. Matches:

NorthwindMvc.Controllers.HomeController.ModelBinding (NorthwindMvc)
NorthwindMvc.Controllers.HomeController.ModelBinding (NorthwindMvc)

Microsoft.AspNetCore.Routing.Matching.DefaultEndpointSelector.ReportAmbiguity(CandidateState[] candidateState)

Stack Query Cookies Headers Routing

AmbiguousMatchException: The request matched multiple endpoints. Matches:
NorthwindMvc.Controllers.HomeController.ModelBinding (NorthwindMvc)
NorthwindMvc.Controllers.HomeController.ModelBinding (NorthwindMvc)

A screenshot of a web browser window titled "Model Binding Demo - NorthwindMvc". The URL is "localhost:5001/home/modelbinding?id=3". The page has a header with "NorthwindMvc" and navigation links for "Home" and "Privacy". On the right, there are "Register" and "Login" links. The main content area is titled "Model Binding Demo" and contains the text "Enter values for your thing in the following form:". Below this is a form with a single input field containing "Red" and a submit button. The text "Submitted Thing" is displayed below the form. Further down, the model values are listed: "Model.ID" with value "3" and "Model.Color" with value "Red". At the bottom of the page, there is a copyright notice: "© 2019 - NorthwindMvc - [Privacy](#)".

Model Binding Demo

Enter values for your thing in the following form:

Red

Submitted Thing

Model.ID
3

Model.Color
Red

© 2019 - NorthwindMvc - [Privacy](#)

Model Binding Demo - Northwind

localhost:5001/home/modelbinding/2?id=3

NorthwindMvc Home Privacy Register Login

Model Binding Demo

Enter values for your thing in the following form:

1 Red Submit

Submitted Thing

Model.Thing.ID
99

Model.Thing.Color

The field ID must be between 1 and 10.

The Color field is required.

© 2019 - NorthwindMvc - [Privacy](#)

Products That Cost More Than

https://localhost:5001/Home/ProductsThatCostMoreThan?price=50

NorthwindMvc Home Privacy Register Login

Products That Cost More Than £50.00

| Category Name | Supplier's Company Name | Product Name | Unit Price | Units In Stock |
|---------------|--------------------------|------------------------|------------|----------------|
| Meat/Poultry | Tokyo Traders | Mishi Kobe Niku | 97.00 | 29 |
| Seafood | Pavlova, Ltd. | Carnarvon Tigers | 62.50 | 42 |
| Confections | Specialty Biscuits, Ltd. | Sir Rodney's Marmalade | 81.00 | 40 |

```

markjprice — bash — 153x64
Marks-MacBook-Pro-13:~ markjprice$ dotnet new --help
Usage: new [options]

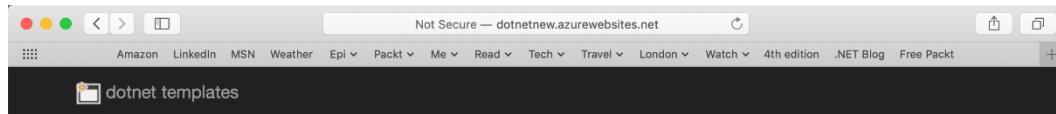
Options:
  -h, --help           Displays help for this command.
  -l, --list            Lists templates containing the specified name. If no name is specified, lists all templates.
  -n, --name             The name for the output being created. If no name is specified, the name of the current directory is used.
  -o, --output            Location to place the generated output.
  -i, --install           Installs a source or a template pack.
  -u, --uninstall         Uninstalls a source or a template pack.
  --nuget-source          Specifies a NuGet source to use during install.
  --type                 Filters templates based on available types. Predefined values are "project", "item" or "other".
  --dry-run              Displays a summary of what would happen if the given command line were run if it would result in a template creation.
  --force                Forces content to be generated even if it would change existing files.
  --lang, --language       Filters templates based on language and specifies the language of the template to create.
  --update-check          Check the currently installed template packs for updates.
  --update-apply           Check the currently installed template packs for update, and install the updates.

Templates
-----
```

| Templates | Short Name | Language | Tags |
|--|------------------|--------------|---------------------------------------|
| Console Application | console | [C#], F#, VB | Common/Console |
| Class library | classlib | [C#], F#, VB | Common/Library |
| Worker Service | worker | [C#] | Common/Worker/Web |
| Unit Test Project | mstest | [C#], F#, VB | Test/MSTest |
| NUnit 3 Test Project | nunit | [C#], F#, VB | Test/NUnit |
| NUnit 3 Test Item | nunit-test | [C#], F#, VB | Test/NUnit |
| xUnit Test Project | xunit | [C#], F#, VB | Test/xUnit |
| Razor Component | razorcomponent | [C#] | Web/ASP.NET |
| Razor Page | page | [C#] | Web/ASP.NET |
| MVC ViewImports | viewimports | [C#] | Web/ASP.NET |
| MVC ViewStart | viewstart | [C#] | Web/ASP.NET |
| Blazor (server-side) | blazorserverside | [C#] | Web/Blazor |
| ASP.NET Core Empty | web | [C#], F# | Web/Empty |
| ASP.NET Core Web App (Model-View-Controller) | mvc | [C#], F# | Web/MVC |
| ASP.NET Core Web App | webapp | [C#] | Web/MVC/Razor Pages |
| ASP.NET Core with Angular | angular | [C#] | Web/MVC/SPA |
| ASP.NET Core with React.js | react | [C#] | Web/MVC/SPA |
| ASP.NET Core with React.js and Redux | reactredux | [C#] | Web/MVC/SPA |
| Razor Class Library | razorclasslib | [C#] | Web/Razor/Library/Razor Class Library |
| ASP.NET Core Web API | webapi | [C#], F# | Web/WebAPI |
| ASP.NET Core gRPC Service | grpc | [C#] | Web/gRPC |
| dotnet gitzignore file | gitzignore | | Config |
| global.json file | globaljson | | Config |
| NuGet Config | nugetconfig | | Config |
| Dotnet local tool manifest file | tool-manifest | | Config |
| Web Config | webconfig | | Config |
| Solution File | sln | | Solution |
| Protocol Buffer File | proto | | Web/gRPC |

```

Examples:
  dotnet new mvc --auth Individual
  dotnet new react --auth Individual
  dotnet new --help
```



Search vue

Search templates

Found 12 matching templates

ASP.NET Core with Vue.js

by: Douglas Cameron | other templates in this pack | Classifications: Web; ASP.NET; SPA; Vue;

ASP.NET Core with Vue.js

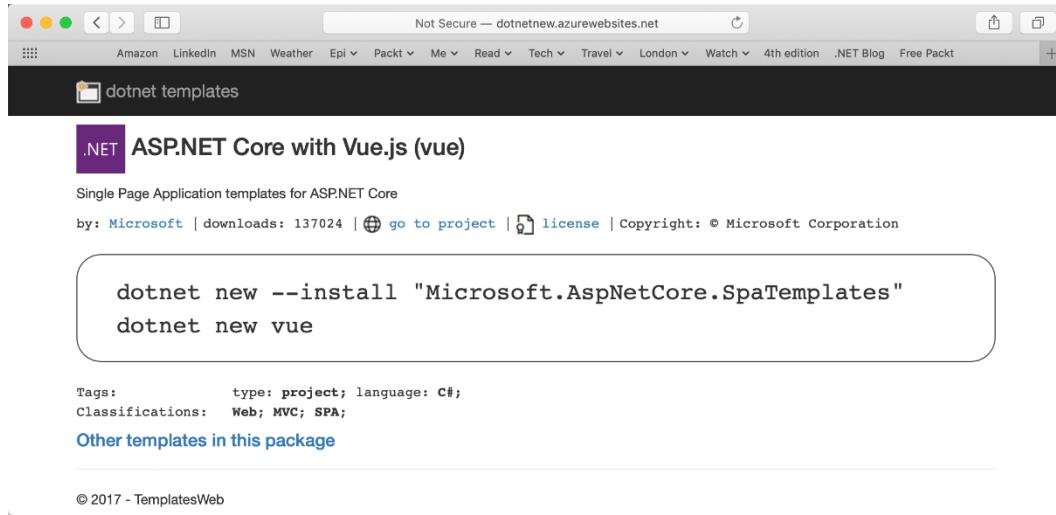
by: Microsoft | other templates in this pack | Tags: type: project; language: C#; Classifications: Web; MVC; SPA;

ASP.NET Core with VueJs

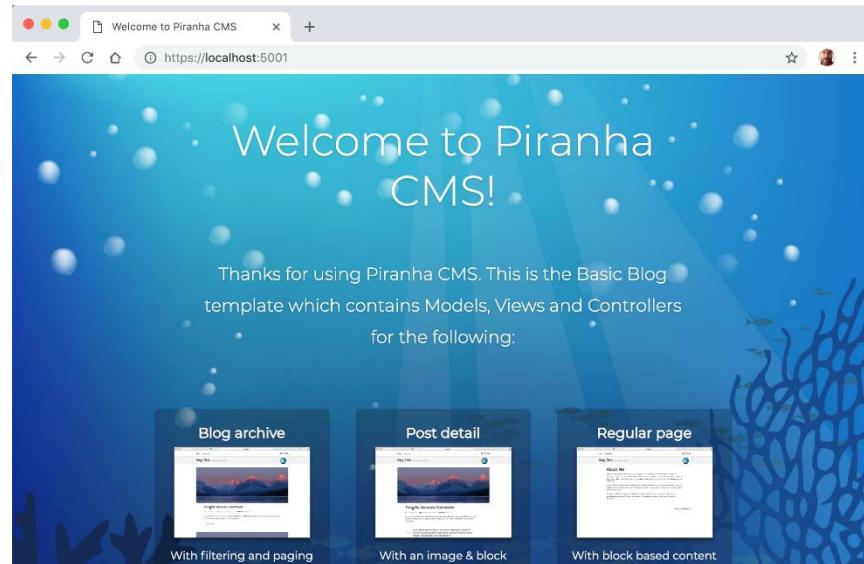
by: Highlander Paiva | other templates in this pack | Tags: type: project; language: C#; Classifications: Web; WebAPI; SPA;

ASP.NET Core with Vue, Vuex and TypeScript

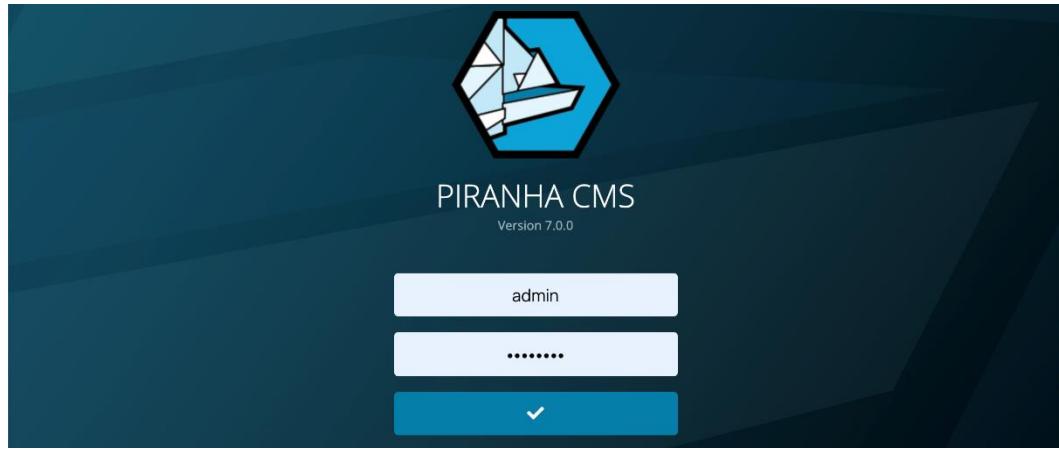
by: Danijel Hr?ek | other templates in this pack | Tags: type: project; language: C#; Classifications: Web; MVC; SPA; Vue; TypeScript;



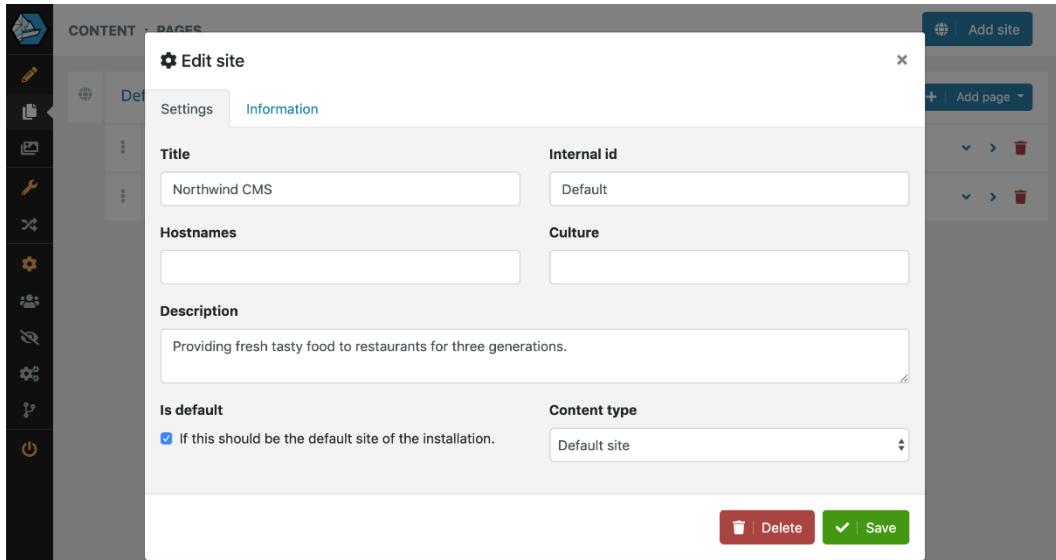
Chapter 17: Building Websites Using a Content Management System



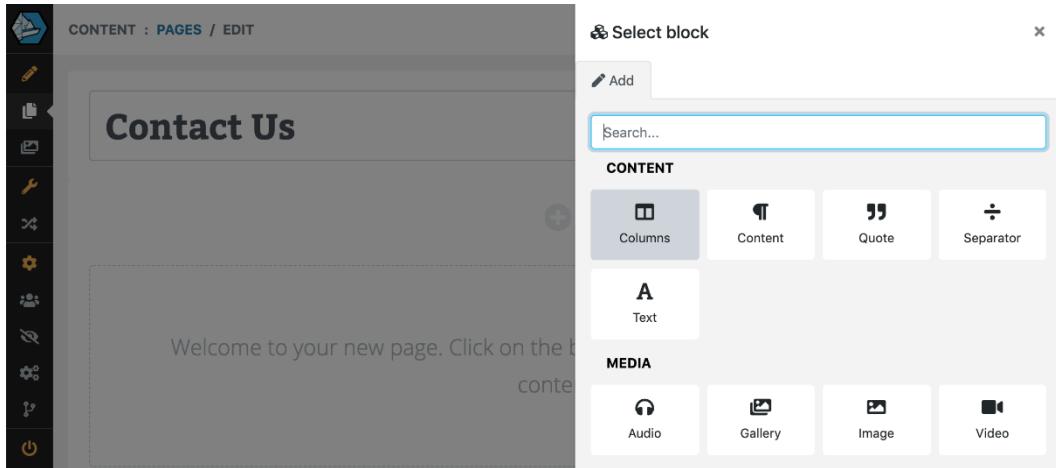
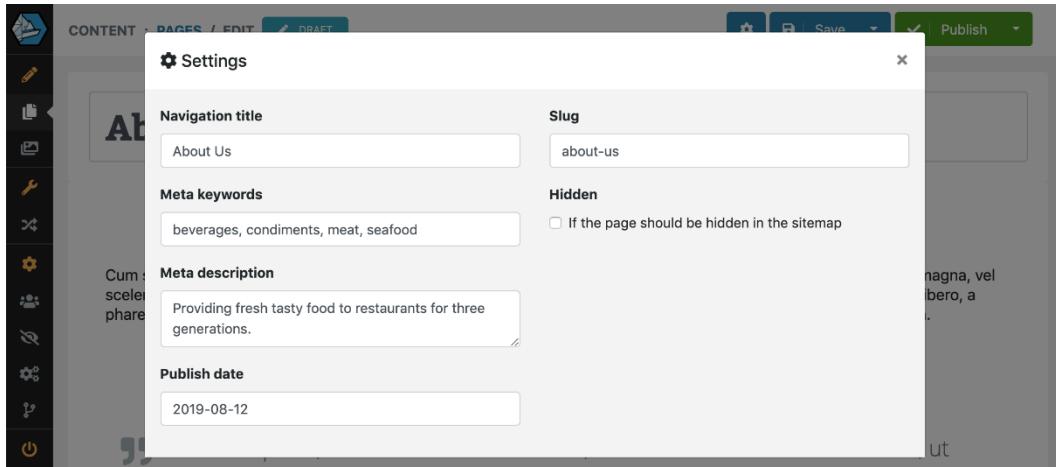
A screenshot of a web browser showing a blog archive page titled 'Blog Archive'. The header includes navigation links for 'Blog' and 'About Me', social media icons for Twitter, Facebook, and LinkedIn, and the 'Piranha CMS' logo. Below the header is a section titled 'LATEST POSTS' featuring a large image of a snowy mountain range at sunset. Underneath the image is the heading 'Welcome to Piranha CMS!', followed by a brief description of the CMS and a 'Read more' button.



This screenshot shows the PIRANHA CMS content manager for the "Pages" section. The browser address bar indicates the URL is "localhost:5001/manager/pages". The main area displays a table of pages under the heading "CONTENT : PAGES". On the left, there is a vertical toolbar with icons for creating new content (document, image, video, etc.). The table has three columns: the first column shows small thumbnail previews, the second column lists the page names ("Blog" and "About Me"), and the third column provides details like "Blog archive" / "2019-08-12" and "Standard page" / "2019-08-12", along with navigation arrows and a delete icon for each row. The title "Default Site" is visible above the table.



The screenshot shows a page titled 'About Us'. The page content includes a paragraph of text: 'Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Praesent commodo cursus magna, vel scelerisque nisl consectetur et. Donec sed odio dui. Vestibulum id ligula porta felis euismod semper. Nulla vitae elit libero, a pharetra augue. Donec id elit non mi porta gravida at eget metus. Donec ullamcorper nulla non metus auctor fringilla.' Below this is a 'QUOTE' block containing a quote: 'Fusce dapibus, tellus ac cursus commodo, tortor mauris condimentum nibh, ut fermentum massa justo sit amet risus. Etiam porta sem malesuada magna mollis euismod.'



CONTENT : PAGES / EDIT

Save | Publish

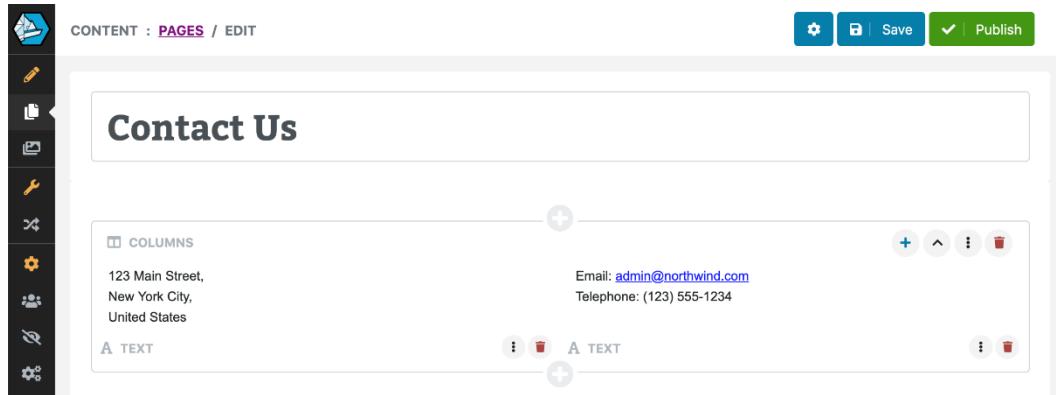
Contact Us

COLUMNS

123 Main Street,
New York City,
United States

Email: admin@northwind.com
Telephone: (123) 555-1234

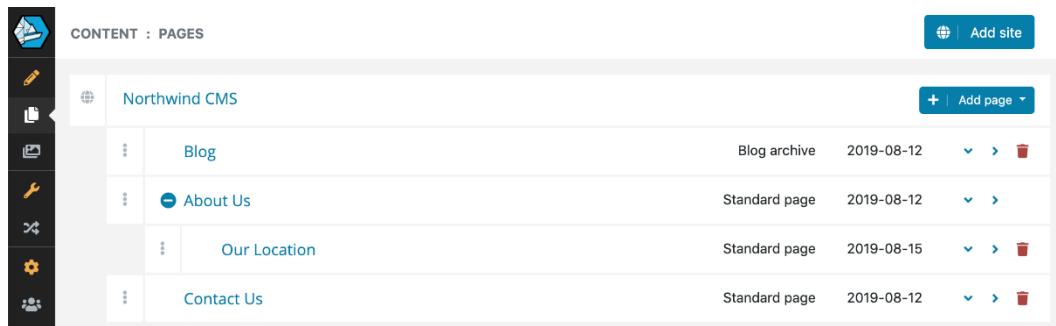
TEXT



CONTENT : PAGES

Add site

| | Northwind CMS | |
|--|---------------|--------------------------|
| | Blog | Blog archive 2019-08-12 |
| | About Us | Standard page 2019-08-12 |
| | Our Location | Standard page 2019-08-15 |
| | Contact Us | Standard page 2019-08-12 |



CONTENT : PAGES / EDIT

Settings

Navigation title

Slug

about-us/our-location



CONTENT : PAGES / EDIT

Save | Publish

Blog Archive

All Drafts Scheduled

Welcome to Piranha CMS! | Published: 2019-08-12 08:17

Blog post Piranha CMS



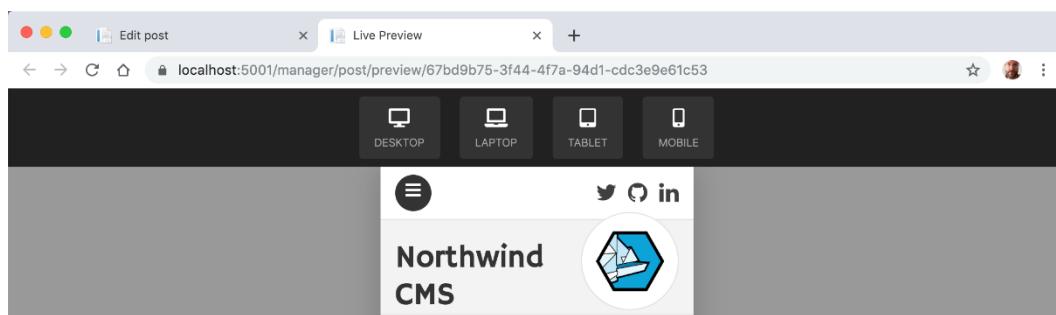
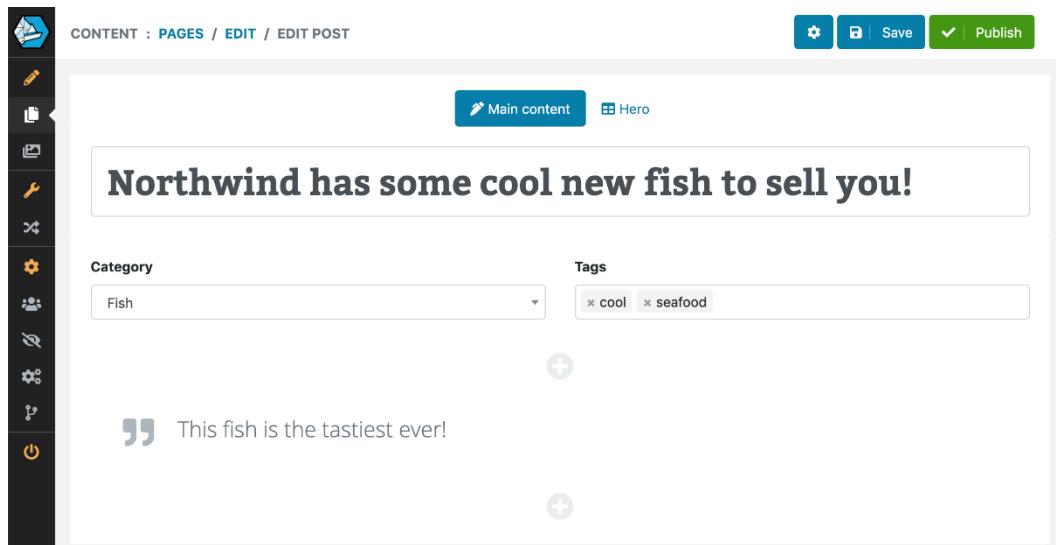
CONTENT : PAGES / EDIT / EDIT POST

Main content Hero

Northwind has some cool new fish to sell you!

Category: Fish Tags: cool, seafood

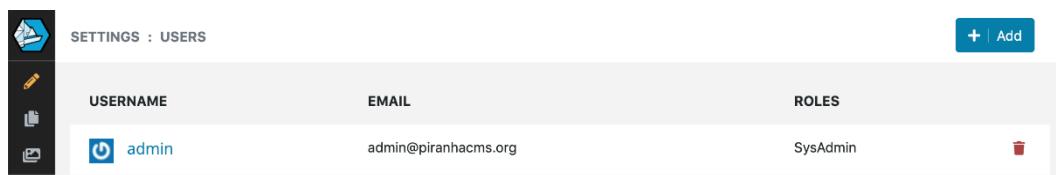
This fish is the tastiest ever!



SETTINGS : USERS

+ | Add

| USERNAME | EMAIL | ROLES |
|----------|----------------------|----------|
| admin | admin@piranhacms.org | SysAdmin |



 SETTINGS : ROLES / EDIT

 Save

GENERAL

| | |
|----------|-----------------|
| Name | Normalized name |
| SysAdmin | SYSADMIN |

CORE PERMISSIONS

| | |
|--|--|
| <input checked="" type="checkbox"/> Page Preview | <input checked="" type="checkbox"/> Post Preview |
|--|--|

MANAGER PERMISSIONS

| |
|---|
| <input checked="" type="checkbox"/> Admin |
|---|

Aliases

| | | |
|--|--|--|
| <input checked="" type="checkbox"/> Delete Aliases | <input checked="" type="checkbox"/> Edit Aliases | <input checked="" type="checkbox"/> List Aliases |
|--|--|--|

Config

| | |
|---|---|
| <input checked="" type="checkbox"/> Edit Config | <input checked="" type="checkbox"/> View Config |
|---|---|



 SETTINGS : ROLES / EDIT

 Save

Media

| | | |
|---|---|--|
| <input checked="" type="checkbox"/> Add Media | <input checked="" type="checkbox"/> Add Media Folders | <input type="checkbox"/> Delete Media |
| <input type="checkbox"/> Delete Media Folders | <input checked="" type="checkbox"/> Edit Media | <input checked="" type="checkbox"/> List Media |

Modules

| |
|---------------------------------------|
| <input type="checkbox"/> List Modules |
|---------------------------------------|

Pages

| | | |
|--|--|--|
| <input checked="" type="checkbox"/> Add Pages | <input type="checkbox"/> Delete Pages | <input checked="" type="checkbox"/> Edit Pages |
| <input checked="" type="checkbox"/> List Pages | <input checked="" type="checkbox"/> Pages - Save | <input type="checkbox"/> Publish Pages |

Posts

| | | |
|--|--|--|
| <input checked="" type="checkbox"/> Add Posts | <input type="checkbox"/> Delete Posts | <input checked="" type="checkbox"/> Edit Posts |
| <input checked="" type="checkbox"/> List Posts | <input type="checkbox"/> Publish Posts | <input checked="" type="checkbox"/> Save Posts |



 SETTINGS : USERS / EDIT

 Save

GENERAL INFORMATION

| | |
|---|---|
| Username Eve | Email address eve@northwind.com |
| Roles <input checked="" type="checkbox"/> Editors <input type="checkbox"/> SysAdmin | |

UPDATE PASSWORD

| | |
|--------------------------|----------------------------------|
| Password ***** | Confirm password ***** |
|--------------------------|----------------------------------|

 Hierarchical page slugs
If page slugs should take their parent slug into account when being generated. This is preferred for larger sitemaps.
 If page slugs should include the parent slug.

 Expanded levels in the sitemap
The default number of levels that should be expanded in the page sitemap. This is useful for smaller sitemaps.
1

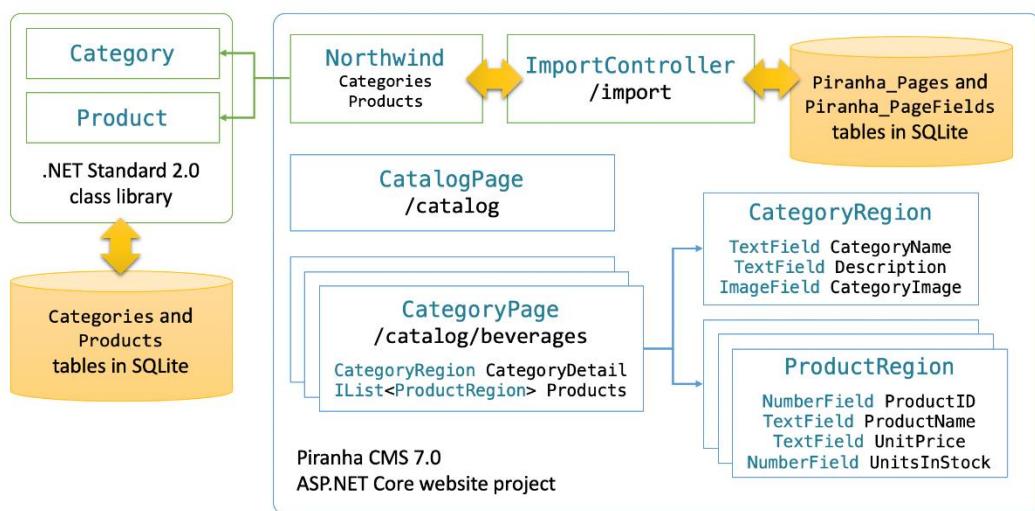
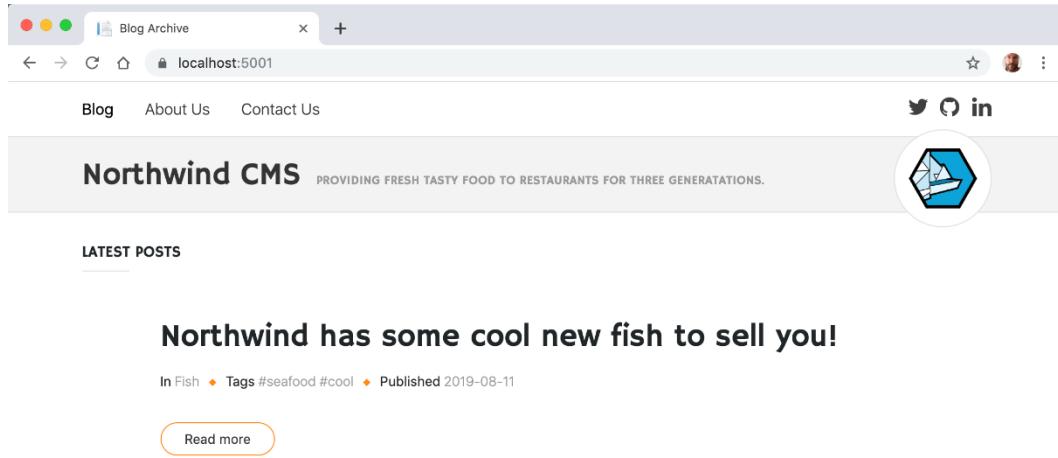
 Archive page size
The default page size for archive pages. Please note that this can be overridden for specific archives.
5

HISTORY

| | |
|--|--|
| Page revisions The maximum number of page revisions that should be stored for each page. A value of 0 means no limitation. 10 | Post revisions The maximum number of post revisions that should be stored for each post. A value of 0 means no limitation. 10 |
|--|--|

CACHING

| | |
|---|---|
| Page cache expiration (minutes) The time in minutes that web browsers can use pages before asking the server for new updates. 30 | Post cache expiration (minutes) The time in minutes that web browsers can use posts before asking the server for new updates. 30 |
|---|---|



CONTENT : MEDIA

+ | Add folder

List Gallery

Drop files here or click to upload.

GALLERY

category1.jpeg category2.jpeg category3.jpeg category4.jpeg category5.jpeg category6.jpeg

category7.jpeg category8.jpeg logo.png pexels-photo-35...

Blog About Us Contact Us Catalog



Northwind CMS

PROVIDING FRESH TASTY FOOD TO RESTAURANTS FOR THREE GENERATIONS.



Catalog



Seafood

Seaweed and fish



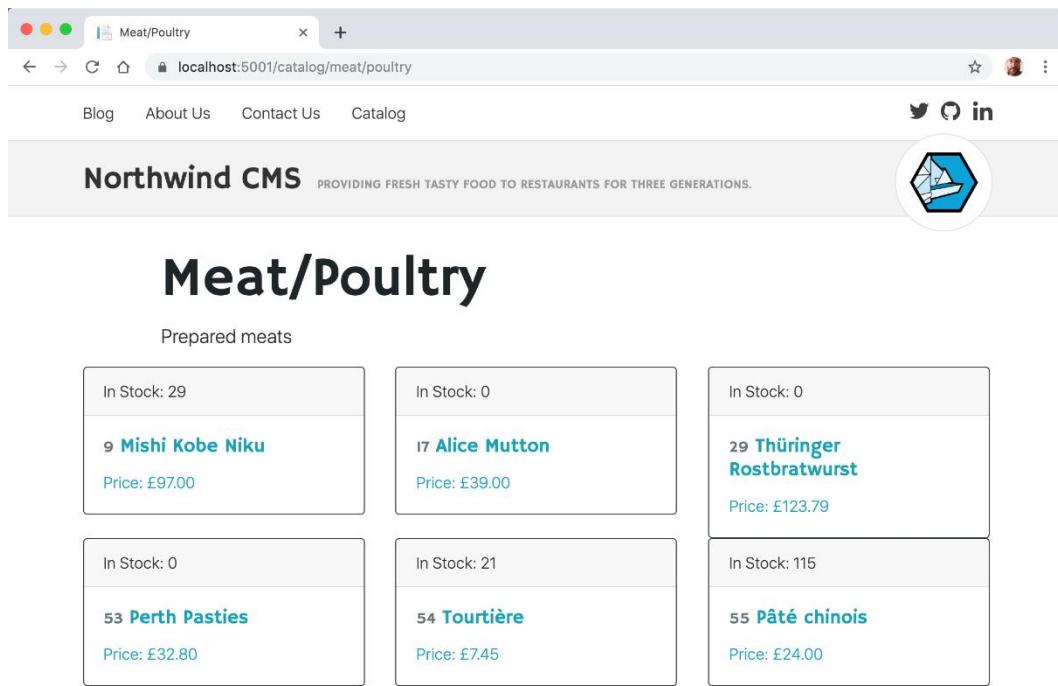
Produce

Dried fruit and bean curd



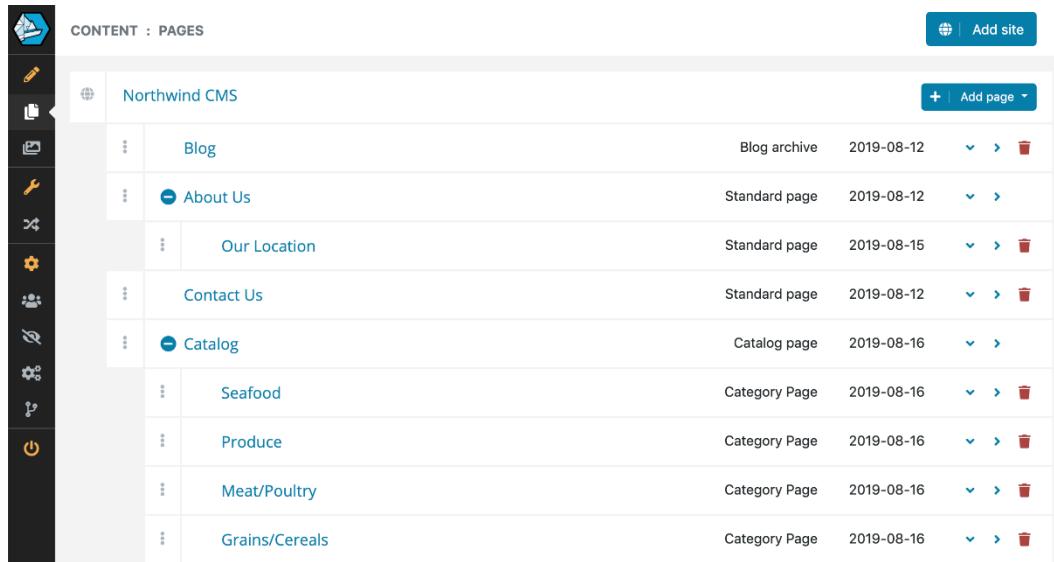
Meat/Poultry

Prepared meats



A screenshot of a web browser displaying the Northwind CMS Meat/Poultry page. The page has a header with the CMS logo and navigation links for Blog, About Us, Contact Us, and Catalog. Social media icons for Twitter, LinkedIn, and Facebook are also present. The main content area features a section titled "Prepared meats" with six product cards arranged in two rows of three. Each card displays the product name, stock level, and price.

| In Stock: 29 | In Stock: 0 | In Stock: 0 |
|---|---|---|
| 9 Mishi Kobe Niku Price: £97.00 | 17 Alice Mutton Price: £39.00 | 29 Thüringer Rostbratwurst Price: £123.79 |
| In Stock: 0 | In Stock: 21 | In Stock: 115 |
| 53 Perth Pasties Price: £32.80 | 54 Tourtière Price: £7.45 | 55 Pâté chinois Price: £24.00 |



A screenshot of the Northwind CMS Content : Pages interface. The left sidebar contains a toolbar with various icons for managing content. The main area shows a hierarchical list of pages under the "Northwind CMS" category. The "Catalog" page is expanded to show its sub-categories: Seafood, Produce, Meat/Poultry, and Grains/Cereals. Each page item includes details like type, creation date, and edit/delete buttons.

| Blog | Blog archive | 2019-08-12 | More |
|----------------|---------------|------------|------|
| About Us | Standard page | 2019-08-12 | More |
| Our Location | Standard page | 2019-08-15 | More |
| Contact Us | Standard page | 2019-08-12 | More |
| Catalog | Catalog page | 2019-08-16 | More |
| Seafood | Category Page | 2019-08-16 | More |
| Produce | Category Page | 2019-08-16 | More |
| Meat/Poultry | Category Page | 2019-08-16 | More |
| Grains/Cereals | Category Page | 2019-08-16 | More |

CONTENT : PAGES / EDIT

Category detail Category products

Meat/Poultry

The details for this category.

Category ID
6

Category name
Meat/Poultry

Description
Prepared meats

Category image
category6.jpeg

+ ×

This screenshot shows a content management system (CMS) interface for editing a category. The left sidebar contains a vertical toolbar with various icons for file operations like create, edit, delete, and search. The main header includes 'CONTENT : PAGES / EDIT' and navigation buttons for 'Save' and 'Publish'. Below the header, there are two tabs: 'Category detail' (which is active) and 'Category products'. The main content area has a title 'Meat/Poultry'. A light blue banner below the title says 'The details for this category.' There are five form fields: 'Category ID' (containing '6'), 'Category name' (containing 'Meat/Poultry'), 'Description' (containing 'Prepared meats'), and 'Category image' (containing 'category6.jpeg'). The 'Category image' field includes a small file manager interface with a '+' button for adding files and a red 'x' button for removing files.

CONTENT : PAGES / EDIT

Save Publish

Category detail Category products

Meat/Poultry

The products for this category.

| | |
|----------------|-----------------|
| Product ID | 9 |
| Product name | Mishi Kobe Niku |
| Unit price | £97.00 |
| Units in stock | 29 |

SQLiteStudio (3.1.1)

Databases

Filter by name

piranha.blog (SQLite 3)

Tables (31)

- __EFMigrationsHistory
- Piranha_Aliases
- Piranha_BlockFields
- Piranha_Blocks
- Piranha_Categories
- Piranha_Media
- Piranha_MediaFolders
- Piranha_MediaVersions
- Piranha_PageBlocks
- Piranha_PageFields
- Piranha_PageRevisions
- Piranha_Pages
- Piranha_PageTypes
- Piranha_Params
- Piranha_PostBlocks
- Piranha_PostFields
- Piranha_PostRevisions
- Piranha_Posts

Piranha_Pages (piranha.blog)

Structure Data Constraints Indexes Triggers DDL

Grid view Form view Total rows loaded: 13

| # | Created | Modified | MetaDescription | ey | NavigationTitle | PageTypeId | ParentPageId |
|----|--------------------|---------------------|---|----------------|-----------------|--------------|--------------|
| 1 | 9-08-2019 08:17:00 | 2019-08-12 08:17:00 | Morbi leo risus, porta ac consectetur ac, vest... | Blog | BlogArchive | NULL | NULL |
| 2 | 9-08-2019 08:45:00 | 2019-08-12 08:45:00 | Providing fresh tasty food to restaurants for... | About Us | About Us | StandardPage | NULL |
| 3 | 9-08-2019 08:59:00 | 2019-08-12 08:59:00 | NULL | NULL | NULL | StandardPage | NULL |
| 4 | 9-08-2019 08:02:00 | 2019-08-15 08:02:00 | NULL | NULL | StandardPage | 100mC0s | NULL |
| 5 | 9-08-2019 09:36:00 | 2019-08-16 09:36:00 | NULL | NULL | NULL | CatalogPage | NULL |
| 6 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Soft drinks, coffees, teas, beers, and ales | Beverages | CategoryPage | >*****+B | NULL |
| 7 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Sweet and savory sauces, relishes, spreads,... | Condiments | CategoryPage | >*****+B | NULL |
| 8 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Desserts, candies, and sweet breads | Confections | CategoryPage | >*****+B | NULL |
| 9 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Cheeses | Dairy Products | CategoryPage | >*****+B | NULL |
| 10 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Breads, crackers, pasta, and cereal | Grains/Cereals | CategoryPage | >*****+B | NULL |
| 11 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Prepared meats | Meat/Poultry | CategoryPage | >*****+B | NULL |
| 12 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Dried fruit and bean curd | Produce | CategoryPage | >*****+B | NULL |
| 13 | 9-08-2019 10:04:00 | 2019-08-16 10:04:00 | Seaweed and fish | Seafood | CategoryPage | >*****+B | NULL |

SQLiteStudio Database Structure View Tools Help

SQLiteStudio (3.1.1)

Databases

Filter by name

piranha.blog (SQLite 3)

Tables (31)

- _EFMigrationsHistory
- Piranha_Aliases
- Piranha_BlockFields
- Piranha_Blocks
- Piranha_Categories
- Piranha_Media
- Piranha_MediaFolders
- Piranha_MediaVersions
- Piranha_PageBlocks
- Piranha_PageFields
- Piranha_PageRevisions
- Piranha_Pages
- Piranha_PageTypes
- Piranha_Params
- Piranha_PostBlocks
- Piranha_PostFields
- Piranha_PostRevisions
- Piranha_Posts

Piranha_PageFields (piranha.blog)

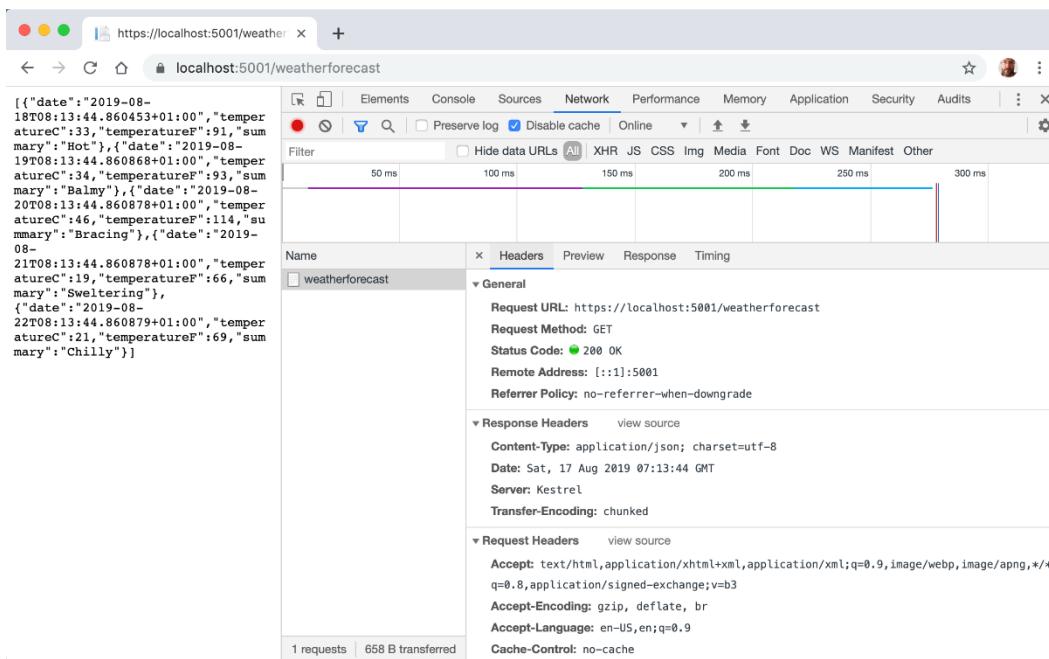
Structure Data Constraints Indexes Triggers DDL

Grid view Form view

Filter data Total rows loaded: 340

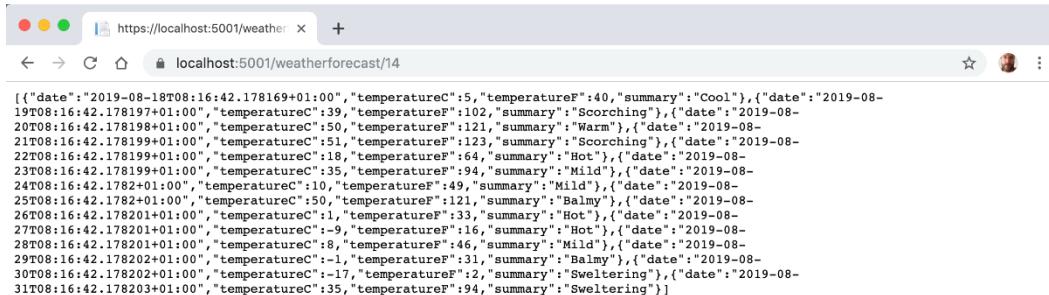
| | Id | CLRType | FieldId | PageId | RegionId | SortOrder | Value |
|----|----|-----------------------------------|--------------|--------|---------------------------|-----------|-------|
| 1 | 1 | Piranha.Extend.Fields.NumberField | CategoryID | 0 | 1 | | |
| 2 | 2 | Piranha.Extend.Fields.NumberField | ProductID | 6 | 39 | | |
| 3 | 3 | Piranha.Extend.Fields.TextField | ProductName | 6 | Charreuse verte | | |
| 4 | 4 | Piranha.Extend.Fields.StringField | UnitPrice | 6 | £18.00 | | |
| 5 | 5 | Piranha.Extend.Fields.NumberField | UnitsInStock | 6 | 69 | | |
| 6 | 6 | Piranha.Extend.Fields.NumberField | ProductID | 7 | 43 | | |
| 7 | 7 | Piranha.Extend.Fields.TextField | ProductName | 7 | Ipoh Coffee | | |
| 8 | 8 | Piranha.Extend.Fields.StringField | UnitPrice | 7 | £46.00 | | |
| 9 | 9 | Piranha.Extend.Fields.NumberField | UnitsInStock | 7 | 17 | | |
| 10 | 10 | Piranha.Extend.Fields.NumberField | ProductID | 8 | 67 | | |
| 11 | 11 | Piranha.Extend.Fields.TextField | ProductName | 8 | Laughing Lumberjack Lager | | |
| 12 | 12 | Piranha.Extend.Fields.NumberField | UnitsInStock | 5 | 17 | | |
| 13 | 13 | Piranha.Extend.Fields.StringField | UnitPrice | 8 | £14.00 | | |

Chapter 18: Building and Consuming Web Services



The screenshot shows a browser window with the URL <https://localhost:5001/weatherforecast>. The Network tab of the developer tools is selected, displaying a single request named "weatherforecast". The response is a JSON array of weather data points:

```
[{"date": "2019-08-18T08:13:44.860453+01:00", "temperatureC": 5, "temperatureF": 40, "summary": "Cool"}, {"date": "2019-08-19T08:13:44.860868+01:00", "temperatureC": 13, "temperatureF": 102, "summary": "Scorching"}, {"date": "2019-08-20T08:13:44.860879+01:00", "temperatureC": 15, "temperatureF": 121, "summary": "Warm"}, {"date": "2019-08-21T08:13:44.860878+01:00", "temperatureC": 18, "temperatureF": 133, "summary": "Scorching"}, {"date": "2019-08-22T08:13:44.860879+01:00", "temperatureC": 21, "temperatureF": 64, "summary": "Hot"}, {"date": "2019-08-23T08:13:44.860879+01:00", "temperatureC": 35, "temperatureF": 94, "summary": "Mild"}, {"date": "2019-08-24T08:13:44.860879+01:00", "temperatureC": 10, "temperatureF": 49, "summary": "Mild"}, {"date": "2019-08-25T08:13:44.860879+01:00", "temperatureC": 15, "temperatureF": 121, "summary": "Balmy"}, {"date": "2019-08-26T08:13:44.860879+01:00", "temperatureC": 11, "temperatureF": 33, "summary": "Hot"}, {"date": "2019-08-27T08:13:44.860879+01:00", "temperatureC": -9, "temperatureF": 16, "summary": "Hot"}, {"date": "2019-08-28T08:13:44.860879+01:00", "temperatureC": 18, "temperatureF": 46, "summary": "Mild"}, {"date": "2019-08-29T08:13:44.860879+01:00", "temperatureC": -1, "temperatureF": 31, "summary": "Balmy"}, {"date": "2019-08-30T08:13:44.860879+01:00", "temperatureC": 17, "temperatureF": 2, "summary": "Sweat"}, {"date": "2019-08-31T08:13:44.860879+01:00", "temperatureC": 35, "temperatureF": 94, "summary": "Sweat"}]
```



The screenshot shows a browser window with the URL <https://localhost:5001/weatherforecast/14>. The Network tab of the developer tools is selected, displaying a single request named "weatherforecast/14". The response is a JSON object representing the 14th weather data point from the array:

```
{"date": "2019-08-18T08:16:42.178169+01:00", "temperatureC": 5, "temperatureF": 40, "summary": "Cool"}, {"date": "2019-08-19T08:16:42.178197+01:00", "temperatureC": 13, "temperatureF": 102, "summary": "Scorching"}, {"date": "2019-08-20T08:16:42.178198+01:00", "temperatureC": 15, "temperatureF": 121, "summary": "Warm"}, {"date": "2019-08-21T08:16:42.178199+01:00", "temperatureC": 18, "temperatureF": 133, "summary": "Scorching"}, {"date": "2019-08-22T08:16:42.178199+01:00", "temperatureC": 21, "temperatureF": 64, "summary": "Hot"}, {"date": "2019-08-23T08:16:42.178199+01:00", "temperatureC": 35, "temperatureF": 94, "summary": "Mild"}, {"date": "2019-08-24T08:16:42.178202+01:00", "temperatureC": 10, "temperatureF": 49, "summary": "Mild"}, {"date": "2019-08-25T08:16:42.178202+01:00", "temperatureC": 15, "temperatureF": 121, "summary": "Balmy"}, {"date": "2019-08-26T08:16:42.178201+01:00", "temperatureC": 11, "temperatureF": 33, "summary": "Hot"}, {"date": "2019-08-27T08:16:42.178201+01:00", "temperatureC": -9, "temperatureF": 16, "summary": "Hot"}, {"date": "2019-08-28T08:16:42.178201+01:00", "temperatureC": 18, "temperatureF": 46, "summary": "Mild"}, {"date": "2019-08-29T08:16:42.178202+01:00", "temperatureC": -1, "temperatureF": 31, "summary": "Balmy"}, {"date": "2019-08-30T08:16:42.178202+01:00", "temperatureC": 17, "temperatureF": 2, "summary": "Sweat"}, {"date": "2019-08-31T08:16:42.178203+01:00", "temperatureC": 35, "temperatureF": 94, "summary": "Sweat"}]
```



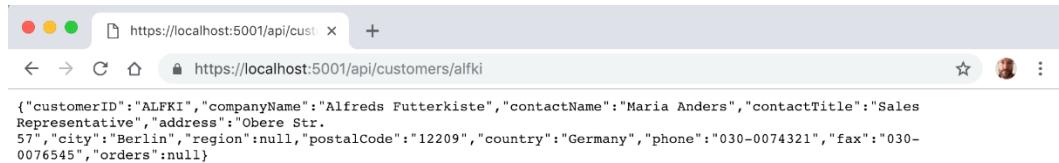
https://localhost:5001/api/customers

```
[{"customerID": "LAZYK", "companyName": "Lazy K Kountry Store", "contactName": "John Steel", "contactTitle": "Marketing Manager", "address": "12 Orchestra Terrace", "city": "Walla Walla", "region": "WA", "postalCode": "99362", "country": "USA", "phone": "(509) 555-7969", "fax": "(509) 555-6221", "orders": null}, {"customerID": "BERGS", "companyName": "Berglunds snabbköp", "contactName": "Christina Berglund", "contactTitle": "Order Administrator", "address": "Berguvsvägen 8", "city": "Luleå", "region": null, "postalCode": "S-958 22", "country": "Sweden", "phone": "0921-12 34 65", "fax": "0921-12 34 67", "orders": null}, {"customerID": "LILAS", "companyName": "LILA-Supermercado", "contactName": "Carlos González", "contactTitle": "Accounting Manager", "address": "Carrera 52 con Ave. Bolívar #65-98 Llano Largo", "city": "Barquisimeto", "region": "Lara", "postalCode": "3508", "country": "Venezuela", "phone": "(9) 331-6954", "fax": "(9) 331-7256", "orders": null}, {"customerID": "TORTU", "companyName": "Tortuga Restaurante", "contactName": "Miguel Angel Paolino", "contactTitle": "Owner", "address": "Avda. Azteca 123", "city": "Mexico D.F.", "region": null, "postalCode": "05033", "country": "Mexico", "phone": "(5) 555-2933", "fax": null, "orders": null}, {"customerID": "WANDK", "companyName": "Die Wandernde Kuh", "contactName": "Rita Müller", "contactTitle": "Sales Representative", "address": "Adenauerallee 900", "city": "Stuttgart", "region": null, "postalCode": "70563", "country": "Germany", "phone": "0711-020361", "fax": "0711-035428", "orders": null}, {"customerID": "MORGK", "companyName": "Morgenstern Gesundkost", "contactName": "Alexander Feuer", "contactTitle": "Marketing Assistant", "address": "Heerstr. 22", "city": "Leipzig", "region": null, "postalCode": "04179", "country": "Germany", "phone": "0342-023176", "fax": null, "orders": null}, {"customerID": "BLAUS", "companyName": "Blauer See Delikatessen", "contactName": "Hanna Moos", "contactTitle": "Sales Representative", "address": "Forsterstr. 57", "city": "Mannheim", "region": null, "postalCode": "68306", "country": "Germany", "phone": "0621-08460", "fax": "0621-08924", "orders": null}, {"customerID": "KOENE", "companyName": "Königlich Essen", "contactName": "Philip Cramer", "contactTitle": "Sales Associate", "address": "Maubelstr. 90", "city": "Brandenburg", "region": null, "postalCode": "14776", "country": "Germany", "phone": "0555-0000000", "fax": null, "orders": null}]
```



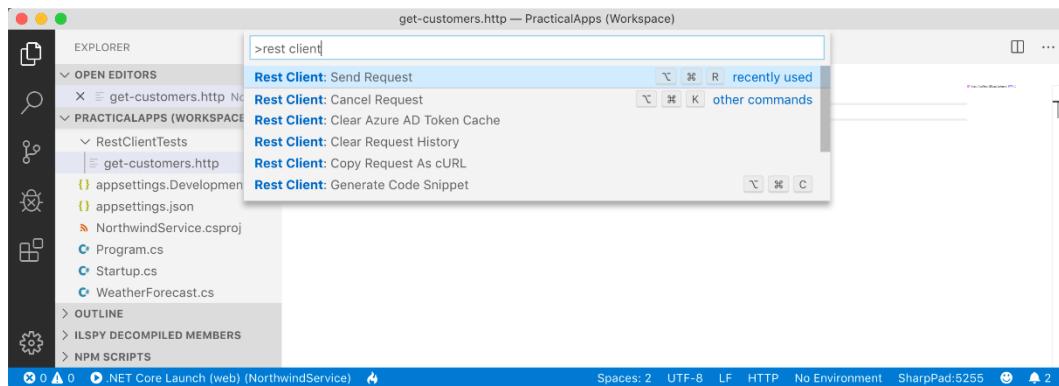
https://localhost:5001/api/customers/?country=Germany

```
[{"customerID": "WANDK", "companyName": "Die Wandernde Kuh", "contactName": "Rita Müller", "contactTitle": "Sales Representative", "address": "Adenauerallee 900", "city": "Stuttgart", "region": null, "postalCode": "70563", "country": "Germany", "phone": "0711-020361", "fax": "0711-035428", "orders": null}, {"customerID": "MORGK", "companyName": "Morgenstern Gesundkost", "contactName": "Alexander Feuer", "contactTitle": "Marketing Assistant", "address": "Heerstr. 22", "city": "Leipzig", "region": null, "postalCode": "04179", "country": "Germany", "phone": "0342-023176", "fax": null, "orders": null}, {"customerID": "BLAUS", "companyName": "Blauer See Delikatessen", "contactName": "Hanna Moos", "contactTitle": "Sales Representative", "address": "Forsterstr. 57", "city": "Mannheim", "region": null, "postalCode": "68306", "country": "Germany", "phone": "0621-08460", "fax": "0621-08924", "orders": null}, {"customerID": "KOENE", "companyName": "Königlich Essen", "contactName": "Philip Cramer", "contactTitle": "Sales Associate", "address": "Maubelstr. 90", "city": "Brandenburg", "region": null, "postalCode": "14776", "country": "Germany", "phone": "0555-0000000", "fax": null, "orders": null}]
```



https://localhost:5001/api/customers/alfki

```
{"customerID": "ALFKI", "companyName": "Alfreds Futterkiste", "contactName": "Maria Anders", "contactTitle": "Sales Representative", "address": "Obere Str. 57", "city": "Berlin", "region": null, "postalCode": "12209", "country": "Germany", "phone": "030-0074321", "fax": "030-0076545", "orders": null}
```



Response(47ms) — PracticalApps (Workspace)

OPEN EDITORS

GROUP 1

- get-customers.http NorthwindService > RestClientTests > Response(47ms) ...

GROUP 2

- Response(47ms)
- PRACTICALAPPS (WORKSPACE)
 - > NorthwindCms
 - > NorthwindService
 - .vscode
 - bin
 - Controllers
 - obj
 - Properties
 - Repositories
 - > RestClientTests
 - get-customers.http
 - appsettings.Development.json
 - appsettings.json
 - NorthwindService.csproj
 - Program.cs
 - Startup.cs
 - WeatherForecast.cs
 - > OUTLINE
 - > ILSPY DECOMPILED MEMBERS
 - > NPM SCRIPTS

Response(47ms) X

```
1 GET https://localhost:5001/api/customers/ HTTP/1.1
2 ## Send Request
3 GET https://localhost:5001/api/customers/?country=Germany HTTP/1.1
4 ##
5 Send Request
6 GET https://localhost:5001/api/customers/?country=USA HTTP/1.1
7 Accept: application/xml
8 GET https://localhost:5001/api/customers/ALFKI HTTP/1.1
```

HTTP/1.1 200 OK

Connection: close

Date: Sat, 17 Aug 2019 10:40:42 GMT

Content-Type: application/xml; charset=utf-8

Server: Kestrel

Content-Length: 5214

<ArrayOfCustomer

xmlns:i="http://www.w3.org/2001/XMLSchema-instance"

10 <Customer>

11 <Customer>

12 <Address>2743 Bering St.</Address>

No Environment SharpPad:5255 2

create-customer.http — PracticalApps (Workspace)

OPEN EDITORS

X create-customer.http NorthwindService > RestClientTests > POST /api/customers/

PRACTICALAPPS (WORKSPACE)

- NorthwindWeb
- NorthwindEntitiesLib
- NorthwindContextLib
- NorthwindEmployees
- NorthwindMvc
- NorthwindCms
- NorthwindService
 - .vscode
 - bin
 - Controllers
 - obj
- OUTLINE
- ILSPY DECOMPILED MEMBERS
- NPM SCRIPTS

create-customer.http X

```
1 POST https://localhost:5001/api/customers/ HTTP/1.1
2 Content-Type: application/json
3 Content-Length: 287
4
5 {
6   "customerID": "ABCXY",
7   "companyName": "ABC Corp",
8   "contactName": "John Smith",
9   "contactTitle": "Sir",
10  "address": "Main Street",
11  "city": "New York",
12  "region": "NY",
13  "postalCode": "90210",
14  "country": "USA",
15  "phone": "(123) 555-1234",
16  "fax": null,
17  "orders": null
18 }
```

No Environment SharpPad:5255

The screenshot shows the SharpPad application interface. In the center, there is a code editor window titled "create-customer.http — PracticalApps (Workspace)". The code is a POST request to "https://localhost:5001/api/customers/". The response pane below shows the server's response, which includes a status line "HTTP/1.1 201 Created", headers, and a JSON body containing customer information.

```

create-customer.http — PracticalApps (Workspace)
NorthwindService > RestClientTests > create-customer.http > POST /api/customers/
Send Request
1 POST https://localhost:5001/api/customers/ HTTP/1.1
2 Content-Type: application/json
3 Content-Length: 287
4
5 {
6   "customerID": "ABCXY",
7   "companyName": "ABC Corp",
8   "contactName": "John Smith",
9   "contactTitle": "Sir",
10  "address": "Main Street",
11  "city": "New York",
12  "region": "NY",
13  "postalCode": "90210",
14  "country": "USA",
15  "phone": "(123) 555-1234",
16  "fax": null,
17  "orders": null
18 }

Response(244ms) ...
1 HTTP/1.1 201 Created
2 Connection: close
3 Date: Sat, 17 Aug 2019 10:46:58 GMT
4 Content-Type: application/json; charset=utf-8
5 Server: Kestrel
6 Transfer-Encoding: chunked
7 Location: https://localhost:5001/api/Customers/abcxy
8
9 {
10   "customerID": "ABCXY",
11   "companyName": "ABC Corp",
12   "contactName": "John Smith",
13   "contactTitle": "Sir",
14   "address": "Main Street",

```

Northwind Service API v1 OAS3

/swagger/v1/swagger.json

Customers

GET /api/Customers

POST /api/Customers

GET /api/Customers/{id}

Parameters

Try it out

Name

Description

id * required

string

(path)

Default value :

GET /api/Customers/{id}

Parameters

| Name | Description |
|--|-------------|
| id * required string (path) | ALFKI |

Cancel

Execute

Request URL
`https://localhost:5001/api/Customers/ALFKI`

Server response

| Code | Details |
|------|---|
| 200 | <p>Response body</p> <pre>{ "customerID": "ALFKI", "companyName": "Alfreds Futterkiste", "contactName": "Maria Anders", "contactTitle": "Sales Representative", "address": "Obere Str. 57", "city": "Berlin", "region": null, "postalCode": "12209", "country": "Germany", "phone": "030-0074321", "fax": "030-0076545", "orders": null }</pre> <p>Download</p> <p>Response headers</p> <pre>content-type: application/json; charset=utf-8 date: Sat, 17 Aug 2019 16:30:51 GMT server: Kestrel transfer-encoding: chunked</pre> |

Request URL
`https://localhost:5001/api/Customers`

Server response

| Code | Details |
|------|--|
| 201 | <p>Response body</p> <pre>{ "customerID": "SUPER", "companyName": "Super Company", "contactName": "Rasmus Ibensen", "contactTitle": "Sales Leader", "address": "Rotterslej 23", "city": "Billund", "region": null, "postalCode": "4371", "country": "Denmark", "phone": "31 21 43 21", "fax": "31 21 43 22", "orders": null }</pre> <p>Download</p> <p>Response headers</p> <pre>content-type: application/json; charset=utf-8 date: Sat, 17 Aug 2019 16:35:22 GMT location: https://localhost:5001/api/Customers/super server: Kestrel transfer-encoding: chunked</pre> |

Request URL
`https://localhost:5001/api/Customers?country=Denmark`

Server response

| Code | Details |
|------|--|
| 200 | <p>Response body</p> <pre>{ "customerID": "SUPER", "companyName": "Super Company", "contactName": "Rasmus Ibensen", "contactTitle": "Sales Leader", "address": "Rotterslej 23", "city": "Billund", "region": null, "postalCode": "4371", "country": "Denmark", "phone": "31 21 43 21", "fax": "31 21 43 22", "orders": null }, { "customerID": "VAFFE", "companyName": "Vaffeljernet", "contactName": "Palle Ibsen", "contactTitle": "Sales Manager", "address": "Smagsloget 45", "city": "Aarhus", "region": null, "postalCode": "8200", "country": "Denmark", "phone": "86 21 32 43", "fax": "86 22 33 44", "orders": null }</pre> <p>Download</p> <p>Response headers</p> <pre>content-type: application/json; charset=utf-8 date: Sat, 17 Aug 2019 16:36:56 GMT server: Kestrel transfer-encoding: chunked</pre> |

Request URL
`https://localhost:5001/api/Customers/super`

Server response

| Code | Details |
|------|--|
| 204 | Response headers <code>date: Sat, 17 Aug 2019 16:38:58 GMT server: Kestrel</code> |

Request URL
`https://localhost:5001/api/Customers/super`

Server response

| Code | Details |
|------|---|
| 404 | Error: Not Found Response body <pre>{ "type": "https://tools.ietf.org/html/rfc7231#section-6.5.4", "title": "Not Found", "status": 404, "traceId": " bdb41868-49e491b337d1d780." }</pre> Download |

Response headers
`content-type: application/problem+json; charset=utf-8
date: Sat, 17 Aug 2019 16:39:50 GMT
server: Kestrel
transfer-encoding: chunked`

Request URL
`https://localhost:5001/api/Customers/bad`

Server response

| Code | Details |
|------|---|
| 400 | Error: Bad Request Response body <pre>{ "type": "https://localhost:5001/customers/failed-to-delete", "title": "Customer ID bad found but failed to delete.", "status": 400, "detail": "More details like Company Name, Country and so on.", "instance": "/api/Customers/bad" }</pre> Download |

Response headers
`content-type: application/problem+json; charset=utf-8
date: Sun, 18 Aug 2019 10:35:42 GMT
server: Kestrel
transfer-encoding: chunked`

A screenshot of a web browser window titled "Customers in UK - Northwind". The URL in the address bar is "https://localhost:5001/Home/Customers?country=UK". The page header includes "NorthwindMvc" and links for "Home" and "Privacy", along with "Register" and "Login" buttons. The main content is a table titled "Customers in UK" with the following data:

| Company Name | Contact Name | Address | Phone |
|-----------------------|-----------------|---|----------------|
| Around the Horn | Thomas Hardy | 120 Hanover Sq. London UK WA1 1DP | (171) 555-7788 |
| Island Trading | Helen Bennett | Garden House Crowther Way Cowes Isle of Wight UK PO31 7PJ | (198) 555-8888 |
| Consolidated Holdings | Elizabeth Brown | Berkeley Gardens 12 Brewery London UK WX1 6LT | (171) 555-2282 |
| Eastern Connection | Ann Devon | 35 King George London UK WX3 6FW | (171) 555-0297 |

Chapter 19: Building Intelligent Apps Using Machine Learning

The screenshot shows the SQLiteStudio interface with two database windows open. The left window displays the 'Orders (Northwind)' table with columns: OrderID, CustomerID, EmployeeID, OrderDate, and so on. The right window displays the 'Order Details (Northwind)' table with columns: OrderID, ProductID, UnitPrice, Quantity, and Discount. Both tables show data from the Northwind database.

The screenshot shows a web browser displaying a page titled 'Products - Northwind ML'. The page includes a sidebar with navigation links like 'Home' and 'Privacy'. The main content area displays product recommendations for a user's shopping cart. It lists products under categories such as 'Beverages' (Soft drinks, coffees, teas, beers, and ales), with buttons for 'Add to Cart' next to 'Chai' and 'Chang'. Below this, there are sections for 'Datasets for training: Germany' and 'Dataset for testing: USA'.

A screenshot of a web browser window displaying a text-based dataset. The URL is <https://localhost:5001/Data/uk-dataset.txt>. The data consists of two columns: ProductID and CoboughtProductID. The entries are:

| ProductID | CoboughtProductID |
|-----------|-------------------|
| 1 | 5 |
| 1 | 11 |
| 1 | 23 |
| 1 | 68 |
| 1 | 69 |
| 2 | 8 |

Datasets for training: [Germany](#) [UK](#) Dataset for testing: [USA](#)
It took 324 milliseconds to train the models.

A screenshot of a web application titled "Shopping Cart - Northwind ML". The URL is <https://localhost:5001/Home/Cart/70>. The page shows a table with a single row: Product ID 70 and Product Name Outback Lager. Below the table, a section titled "Customers who bought items in your cart also bought the following products" displays a table of co-bought products with scores. Each row has a "Add to Cart" button. The data is as follows:

| | Co-bought Product | Score |
|-----------------------------|--------------------|-----------|
| Add to Cart | Schoggi Schokolade | 1.264186 |
| Add to Cart | Gravad lax | 1.1981432 |
| Add to Cart | Röd Kaviar | 1.1018857 |

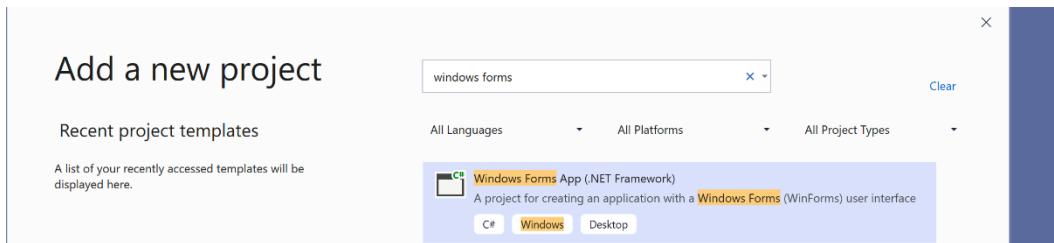
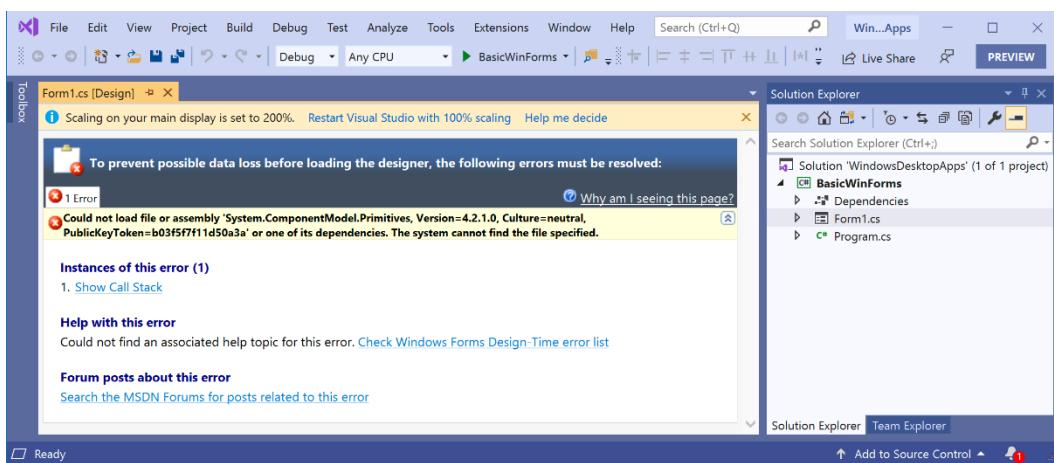
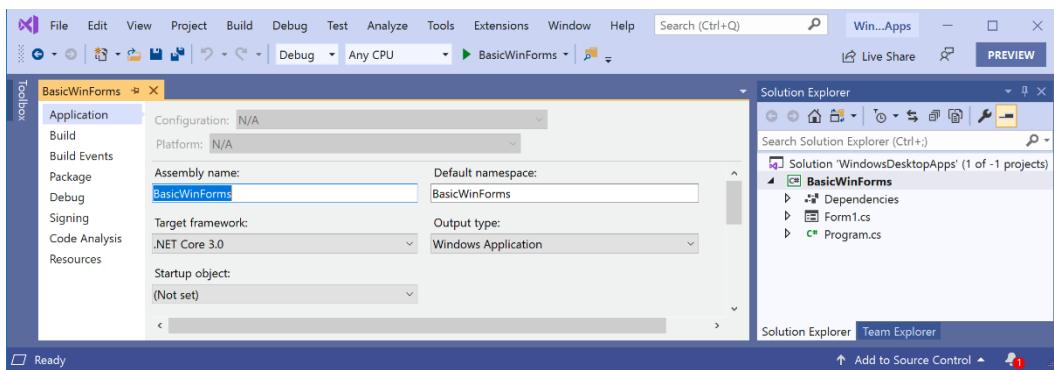
The screenshot shows a web browser window titled "Shopping Cart - Northwind ML". The URL in the address bar is <https://localhost:5001/Home/Cart/43>. The page header includes links for "NorthwindML", "Home", and "Privacy". The main content area has a title "Shopping Cart - Northwind ML". Below it is a table with two columns: "Product ID" and "Product Name". The table contains three rows: one for Product ID 70 (Outback Lager) and one for Product ID 43 (Ipoh Coffee). A section titled "Customers who bought items in your cart also bought the following products" follows, featuring a table with columns for "Co-bought Product" and "Score". Three products are listed with their respective scores: NuNuCa Nuß-Nougat-Creme (1.2979985), Schoggi Schokolade (1.264186), and Gula Malacca (1.261986). Each row in this table also includes a blue "Add to Cart" button.

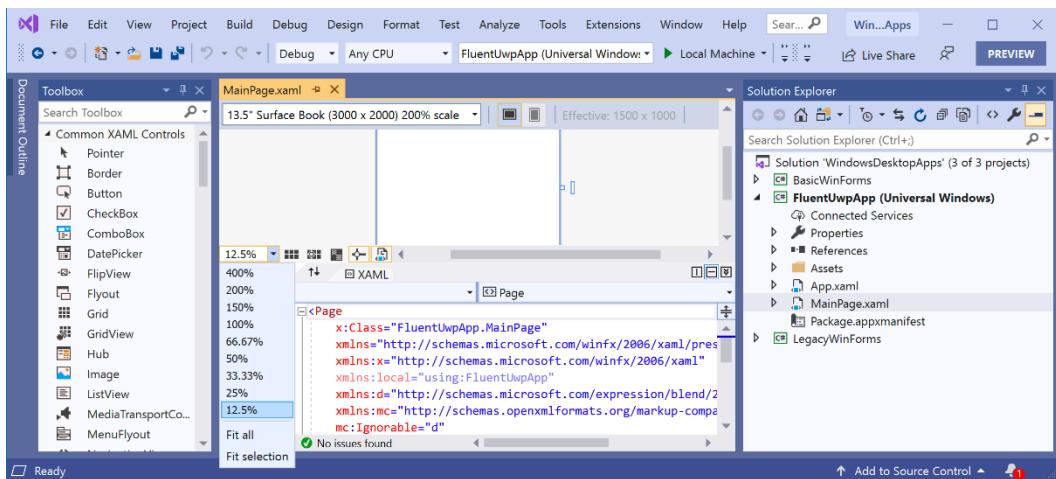
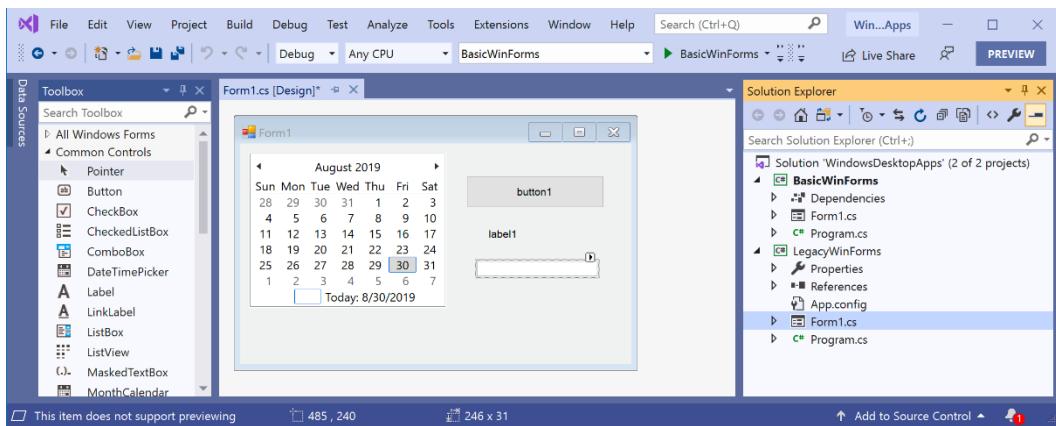
| Product ID | Product Name |
|------------|---------------|
| 70 | Outback Lager |
| 43 | Ipoh Coffee |

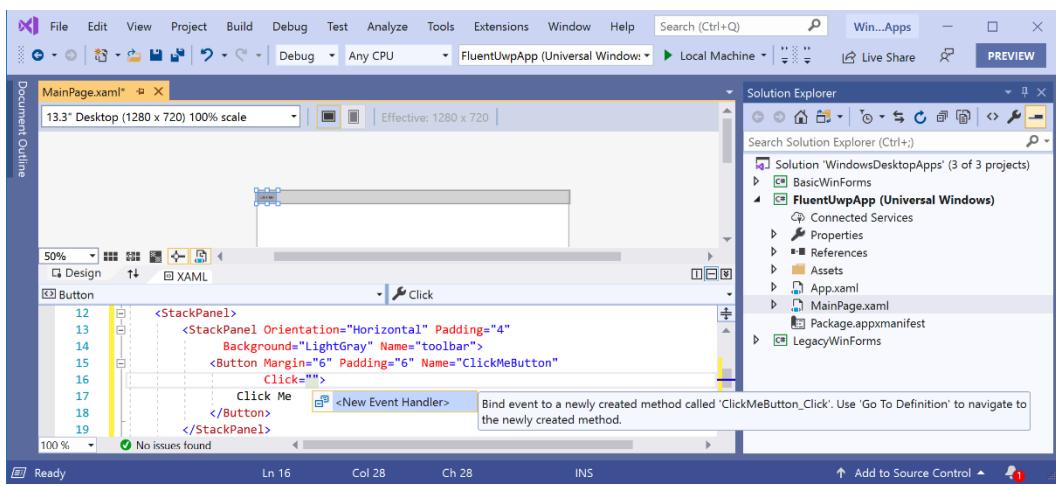
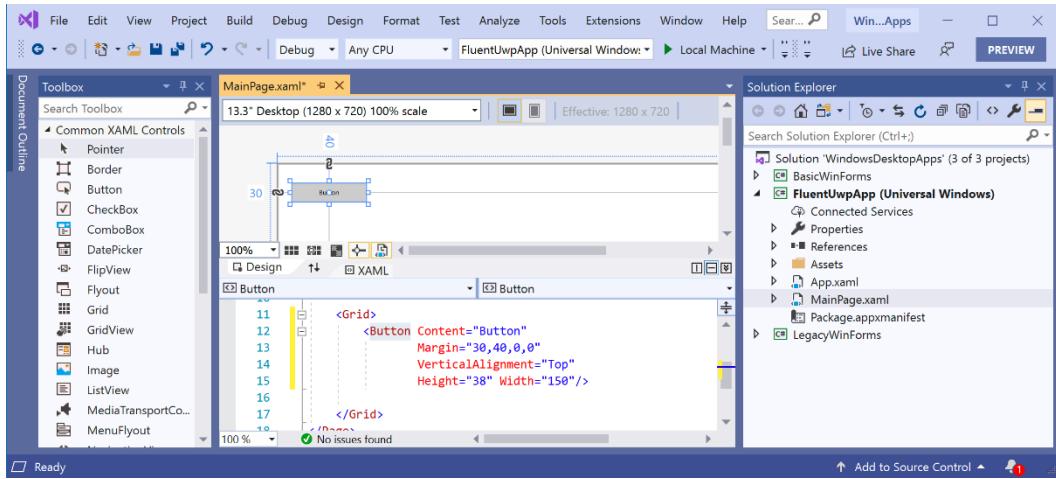
Customers who bought items in your cart also bought the following products

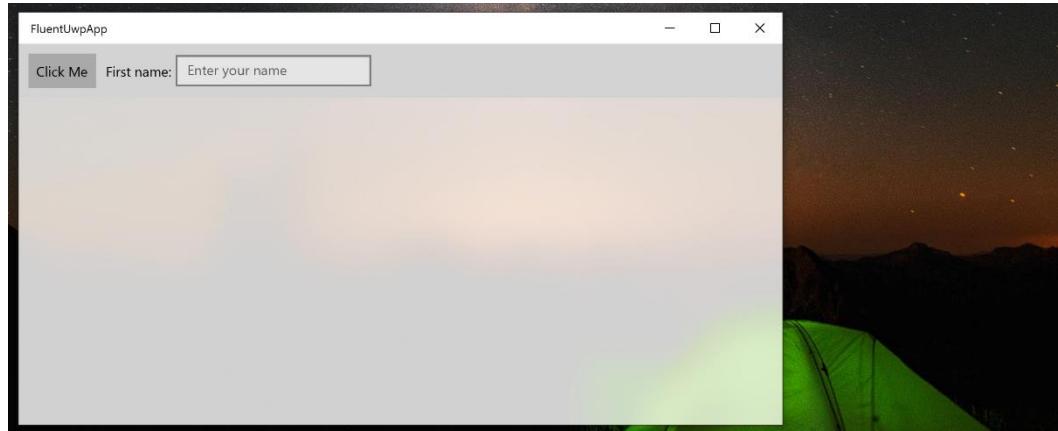
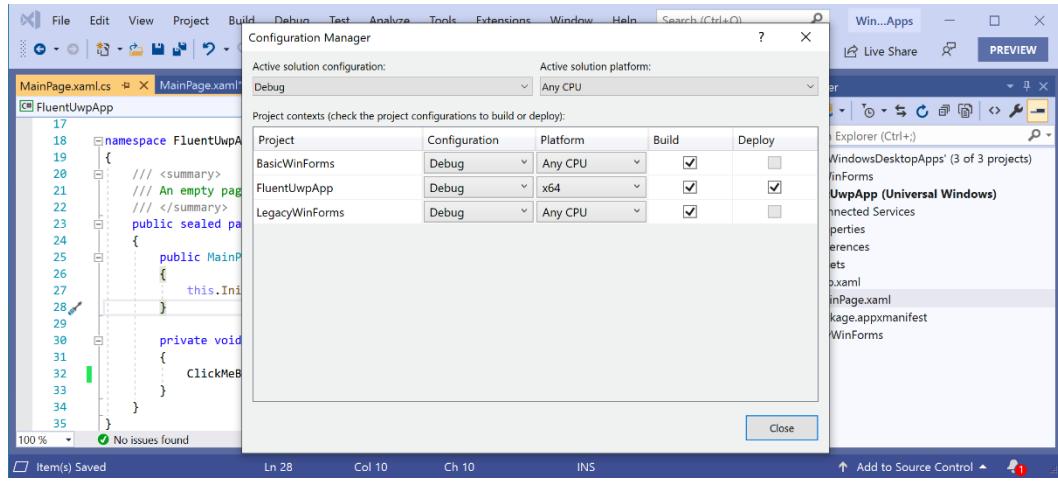
| | Co-bought Product | Score |
|------------------------------|-------------------------|-----------|
| <button>Add to Cart</button> | NuNuCa Nuß-Nougat-Creme | 1.2979985 |
| <button>Add to Cart</button> | Schoggi Schokolade | 1.264186 |
| <button>Add to Cart</button> | Gula Malacca | 1.261986 |

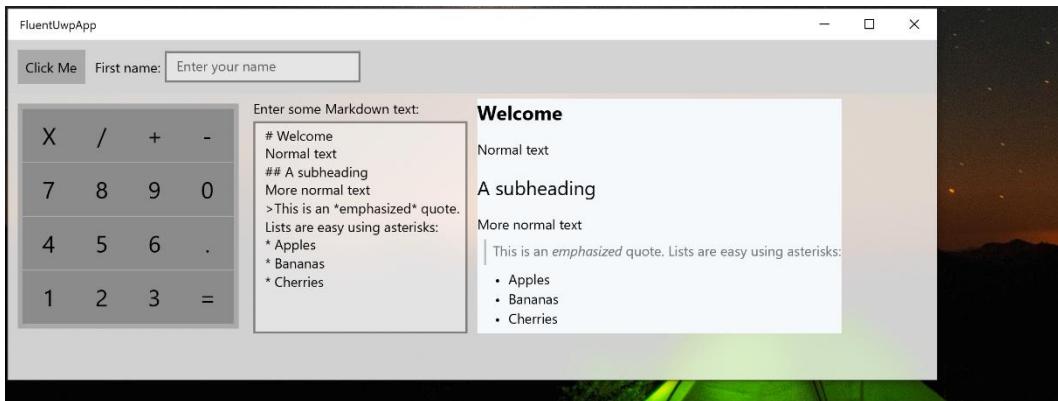
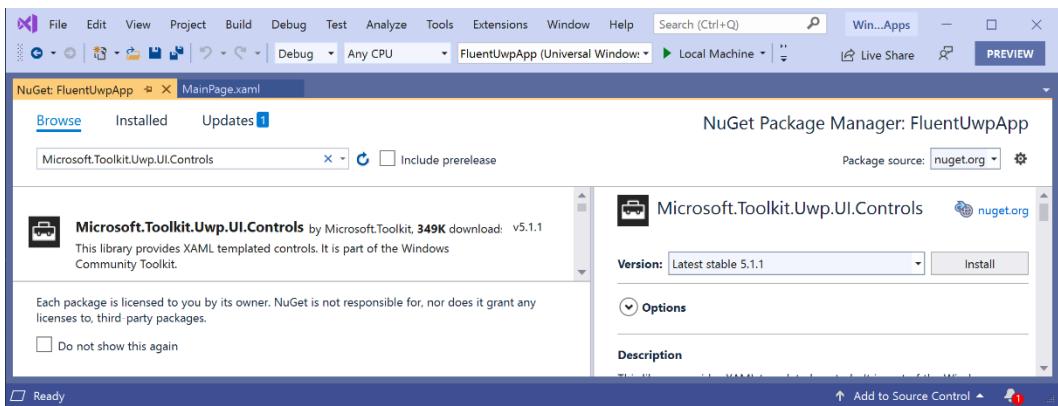
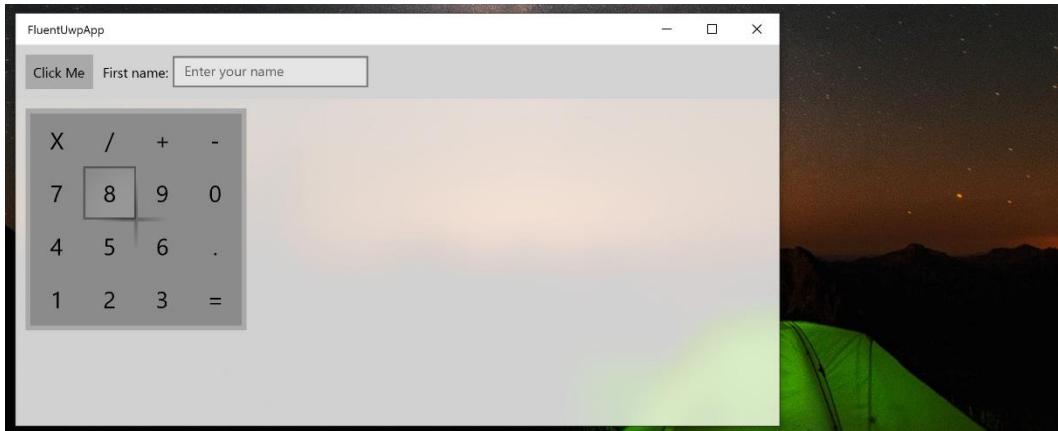
Chapter 20: Building Windows Desktop Apps

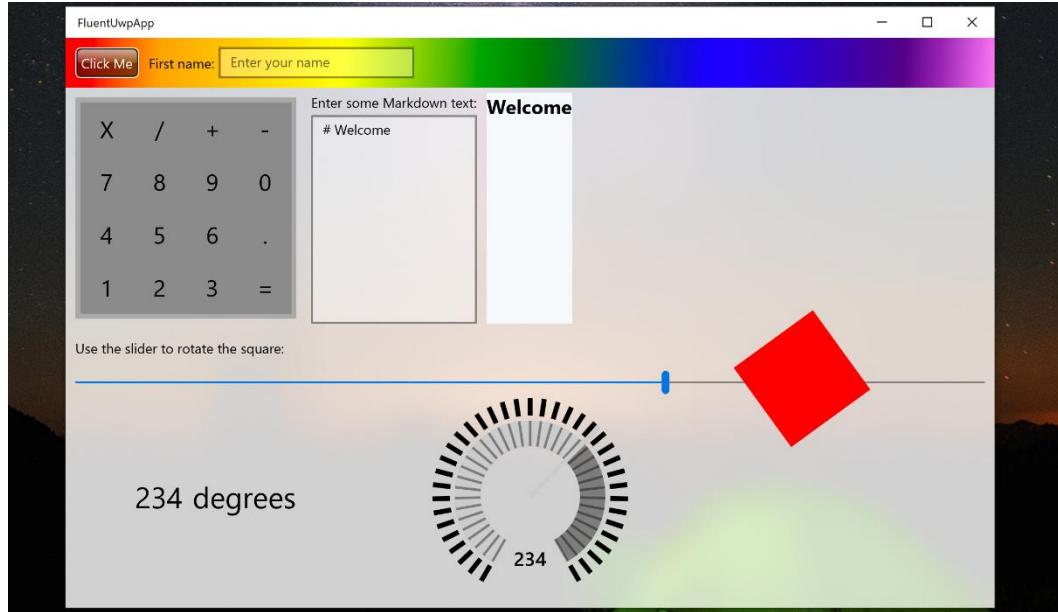
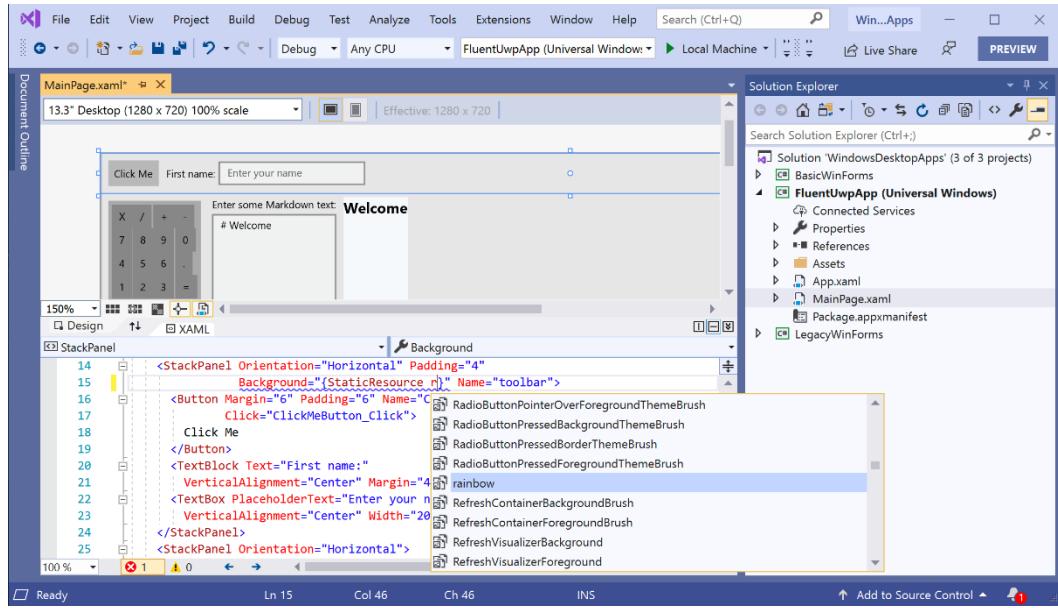


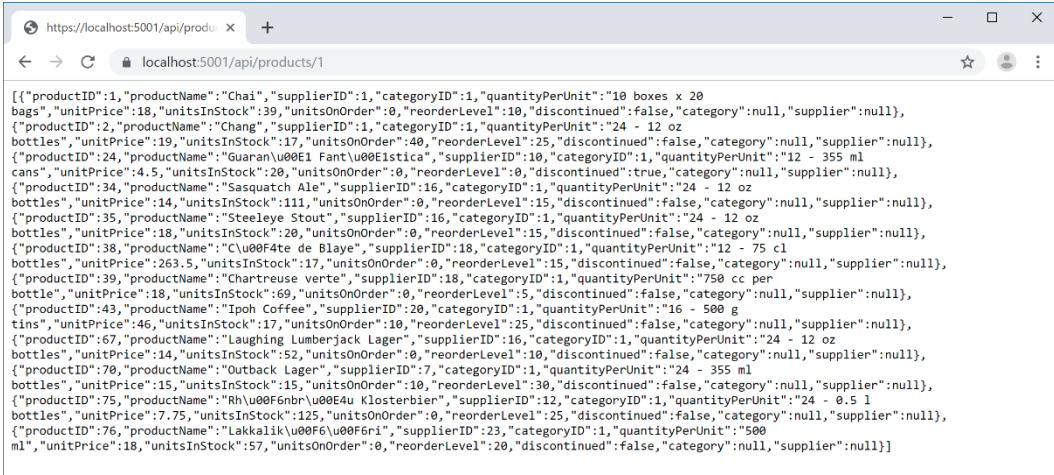




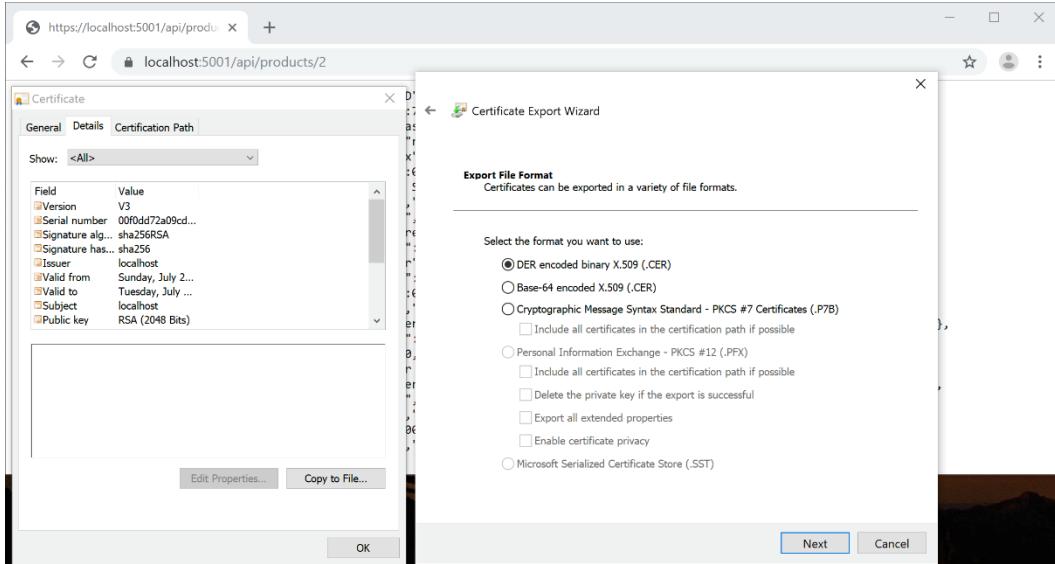


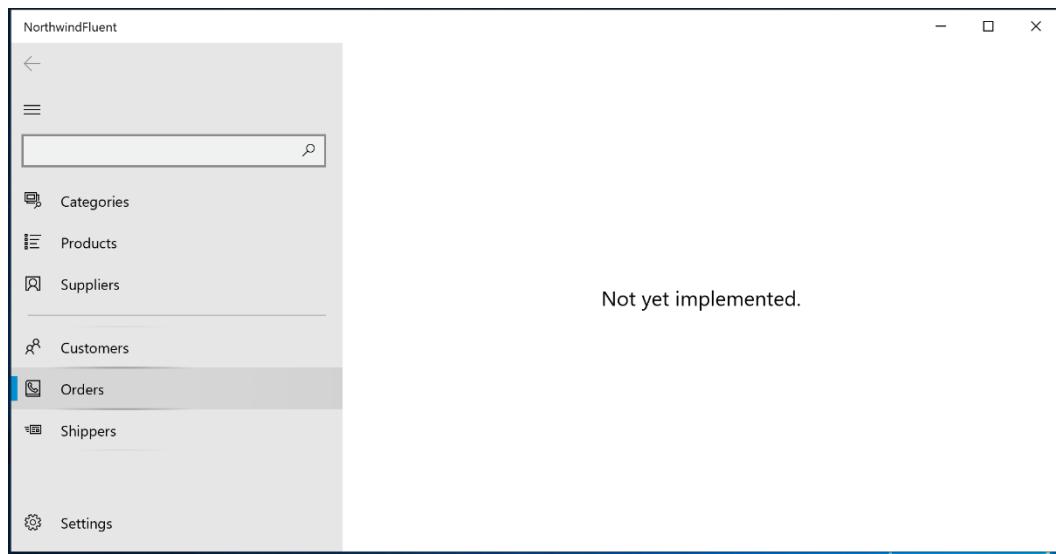
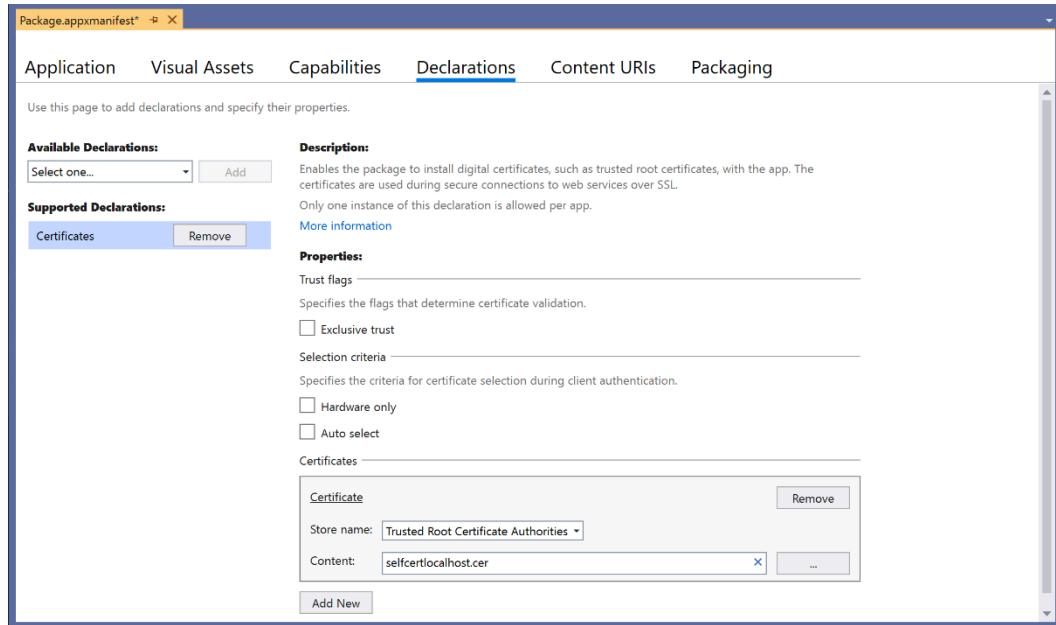






```
[{"productID":1,"productName":"Chai","supplierID":1,"categoryID":1,"quantityPerUnit":"10 boxes x 20 bags","unitPrice":18,"unitsInStock":39,"unitsOnOrder":0,"reorderLevel":10,"discontinued":false,"category":null,"supplier":null}, {"productID":2,"productName":"Chang","supplierID":1,"categoryID":1,"quantityPerUnit":"24 - 12 oz bottles","unitPrice":19,"unitsInStock":17,"unitsOnOrder":40,"reorderLevel":25,"discontinued":false,"category":null,"supplier":null}, {"productID":24,"productName":"Guan\ud83c\udfa1 Fant\ud83c\udfa1stica","supplierID":10,"categoryID":1,"quantityPerUnit":"12 - 355 ml cans","unitPrice":4.5,"unitsInStock":20,"unitsOnOrder":0,"reorderLevel":0,"discontinued":true,"category":null,"supplier":null}, {"productID":34,"productName":"Sasquatch Ale","supplierID":16,"categoryID":1,"quantityPerUnit":"24 - 12 oz bottles","unitPrice":11,"unitsInStock":11,"unitsOnOrder":0,"reorderLevel":15,"discontinued":false,"category":null,"supplier":null}, {"productID":35,"productName":"Steelye Stout","supplierID":16,"categoryID":1,"quantityPerUnit":"24 - 12 oz bottles","unitPrice":18,"unitsInStock":15,"unitsOnOrder":0,"reorderLevel":15,"discontinued":false,"category":null,"supplier":null}, {"productID":38,"productName":"C\ud83c\udfa4te de Blaye","supplierID":18,"categoryID":1,"quantityPerUnit":"12 - 75 cl bottles","unitPrice":263.5,"unitsInStock":17,"unitsOnOrder":0,"reorderLevel":15,"discontinued":false,"category":null,"supplier":null}, {"productID":39,"productName":"Chartreuse verte","supplierID":18,"categoryID":1,"quantityPerUnit":"750 cc per bottle","unitPrice":18,"unitsInStock":69,"unitsOnOrder":0,"reorderLevel":5,"discontinued":false,"category":null,"supplier":null}, {"productID":43,"productName":"Ipoh Coffee","supplierID":20,"categoryID":1,"quantityPerUnit":16 500 g tins","unitPrice":46,"unitsInStock":17,"unitsOnOrder":10,"reorderLevel":25,"discontinued":false,"category":null,"supplier":null}, {"productID":67,"productName":"Laughing Lumberjack Lager","supplierID":16,"categoryID":1,"quantityPerUnit":"24 - 12 oz bottles","unitPrice":14,"unitsInStock":52,"unitsOnOrder":0,"reorderLevel":10,"discontinued":false,"category":null,"supplier":null}, {"productID":70,"productName":"Outback Lager","supplierID":7,"categoryID":1,"quantityPerUnit":24 - 355 ml bottles","unitPrice":15,"unitsInStock":15,"unitsOnOrder":10,"reorderLevel":30,"discontinued":false,"category":null,"supplier":null}, {"productID":75,"productName":"Rh\ud83c\udfa0F6nbr\ud83c\udfa0E4 Klosterbier","supplierID":12,"categoryID":1,"quantityPerUnit":24 - 0.5 l bottles","unitPrice":7.75,"unitsInStock":125,"unitsOnOrder":0,"reorderLevel":25,"discontinued":false,"category":null,"supplier":null}, {"productID":76,"productName":"Lakkalik\ud83c\udfa0F6\ud83c\udfa0F6ri","supplierID":23,"categoryID":1,"quantityPerUnit":500 ml","unitPrice":18,"unitsInStock":57,"unitsOnOrder":0,"reorderLevel":20,"discontinued":false,"category":null,"supplier":null}]
```





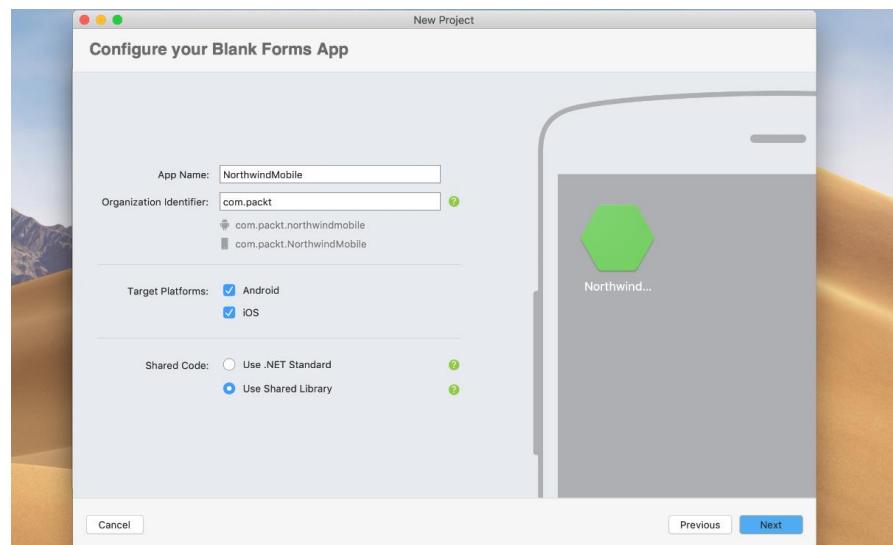
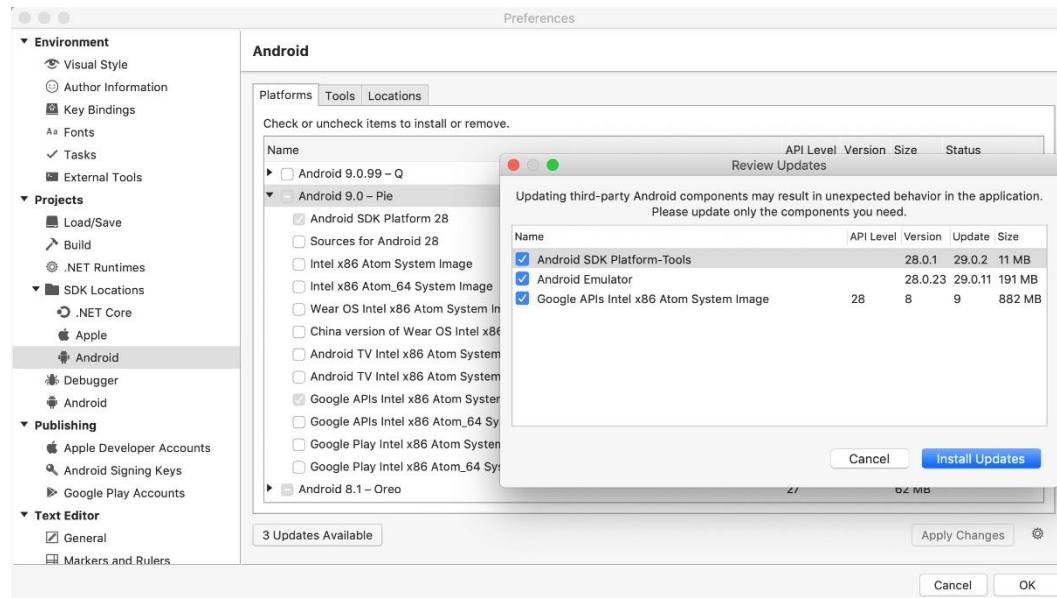
Categories

Beverages
Soft drinks, coffees, teas, beers, and ales

Condiments
Sweet and savory sauces, relishes, spreads, and seasonings

Confections
Desserts, candies, and sweet breads

Chapter 21: Building Cross-Platform Mobile Apps Using Xamarin.Forms



The screenshot shows the Visual Studio Community interface with the solution 'NorthwindMobile' open. The 'MainPage.xaml.cs' file is selected in the 'Solution Explorer' on the left. The main window displays the XAML code for the main page:

```
<?xml version="1.0" encoding="utf-8"?>
<ContentPage xmlns="http://xamarin.com/schemas/2014/forms" xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml">
    <StackLayout>
        <!-- Place new controls here -->
        <Label Text="Welcome to Xamarin.Forms!" HorizontalOptions="Center" VerticalOptions="CenterAndExpand" />
    </StackLayout>
</ContentPage>
```

The 'Source' tab is active at the bottom of the code editor.

