

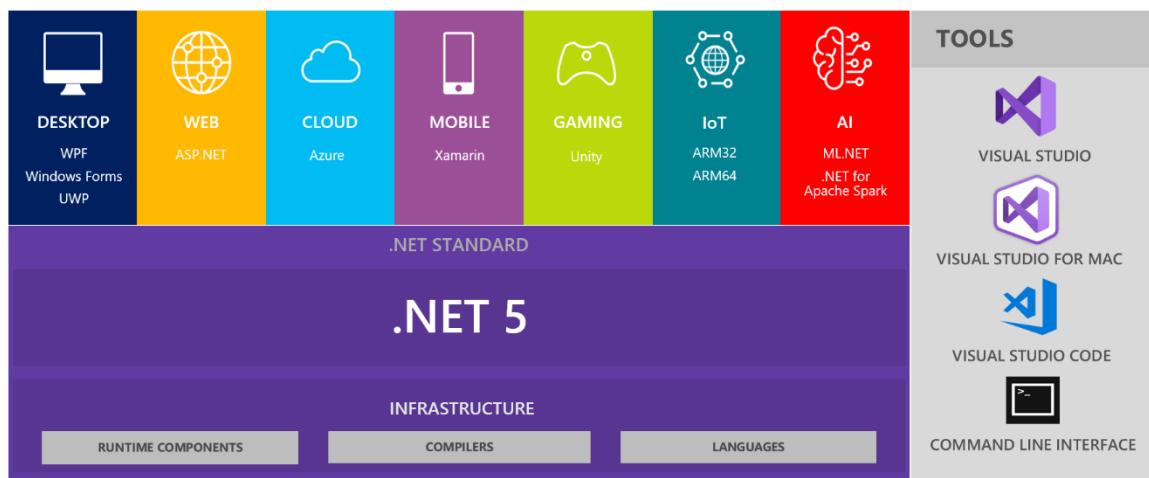
Chapter 1: Introduction to ASP.NET Core 5

```
C:\Users\andreas>dotnet --info
.NET SDK (reflecting any global.json):
  Version:  5.0.100-preview.5.20279.10
  Commit:   8139f1b74e

Runtime Environment:
  OS Name:     Windows
  OS Version:  10.0.20150
  OS Platform: Windows
  RID:         win10-x64
  Base Path:   C:\Program Files\dotnet\sdk\5.0.100-preview.5.20279.10\

Host (useful for support):
  Version: 5.0.0-preview.5.20278.1
  Commit:  4ae4e2fe08
```

.NET – A unified platform



.NET Release Schedule

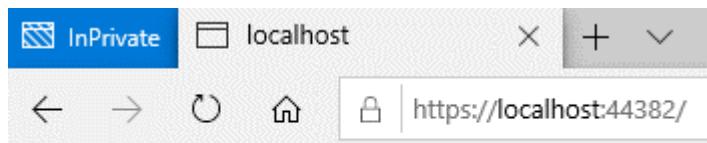
July 2019	Sept 2019	Nov 2019	Nov 2020	Nov 2021	Nov 2022	Nov 2023
.NET Core 3.0 RC	.NET Core 3.0 GA	.NET Core 3.1 LTS	.NET Core 5.0 GA	.NET Core 6.0 LTS	.NET Core 7.0 GA	.NET Core 8.0 LTS

RC = Release Candidate

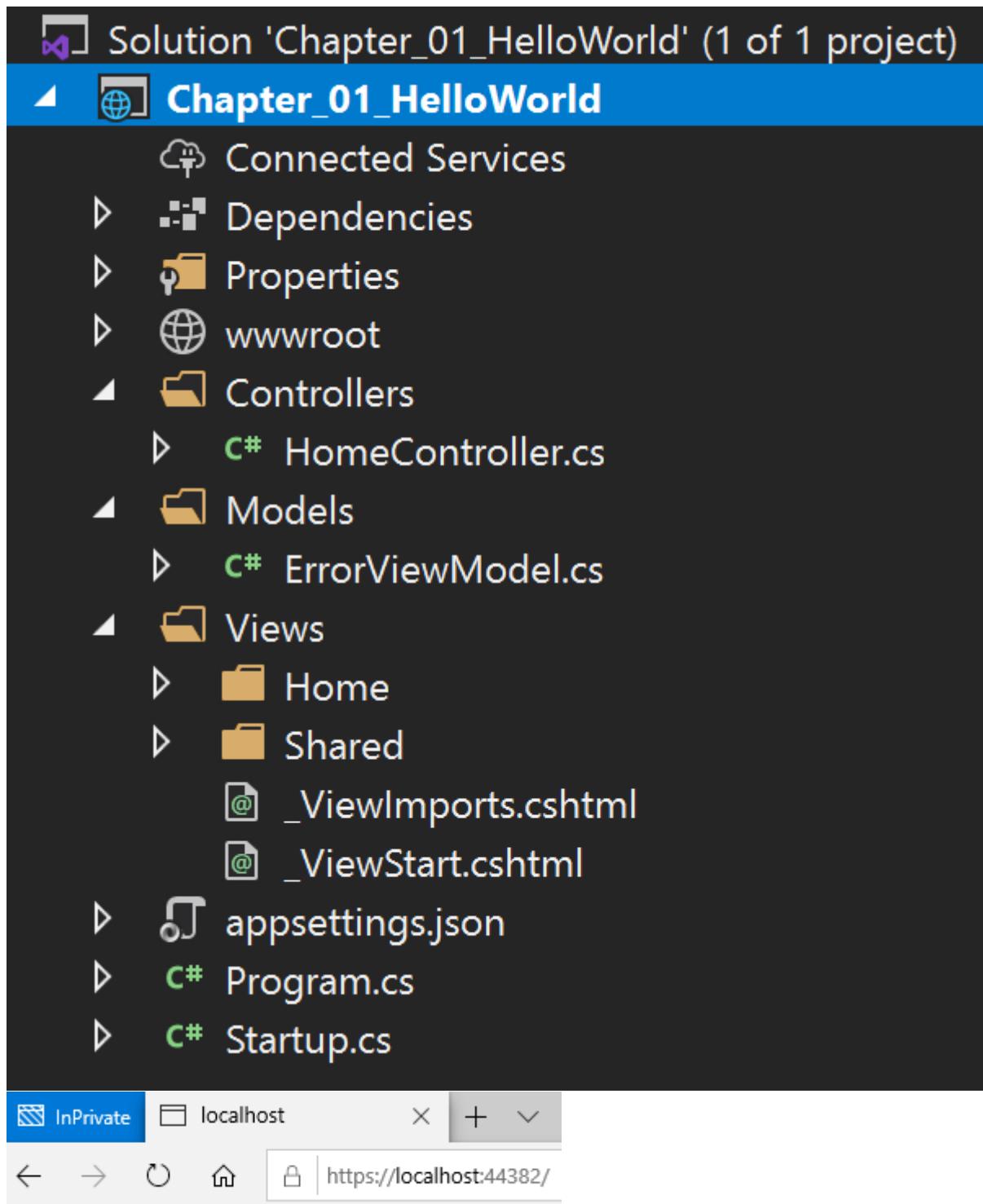
GA = General Availability

LTS = Long Term Support

- Major releases every year
- LTS for even numbered releases



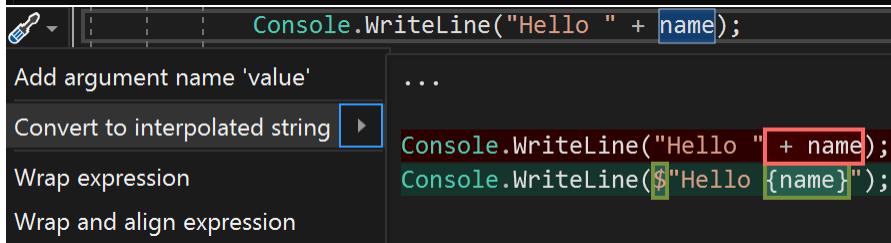
Hello World!



The time is now:

8/24/2020 8:14:16 PM

Templates	Short Name	Language	Tags
Console Application	console	[C#], F#, VB	Common/Console
Class library	classlib	[C#], F#, VB	Common/Library
WPF Application	wpf	[C#], VB	Common/WPF
WPF Class library	wpflib	[C#], VB	Common/WPF
WPF Custom Control Library	wpfcustomcontrollib	[C#], VB	Common/WPF
WPF User Control Library	wpfusercontrollib	[C#], VB	Common/WPF
Windows Forms (WinForms) Application	winforms	[C#], VB	Common/WinForms
Windows Forms (WinForms) Class library	winformslib	[C#], VB	Common/WinForms
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 App	blazorserver	[C#]	Web/Blazor
Blazor WebAssembly App	blazorwasm	[C#]	Web/Blazor/WebAssembly
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
ASP.NET Core Web API	webapi	[C#], F#	Web/WebAPI
ASP.NET Core gRPC Service	grpc	[C#]	Web/gRPC
dotnet ignore file	gitignore		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



Options

General HTTPS Connections Gateway Appearance Scripting Extensions Performance Tools

Fiddler can decrypt HTTPS sessions by re-signing traffic using self-generated certificates.

Capture HTTPS CONNECTs  Actions

Decrypt HTTPS traffic

...from all processes Certificates generated by [CertEnroll engine](#)

Ignore server certificate errors (unsafe)

Check for certificate revocation

Protocols: <client>;ssl3;tls1.2

[Skip decryption](#) for the following hosts:

Help

Note: Changes may not take effect until Fiddler is restarted.

OK

Cancel

[Get Started](#)

 Statistics

 Inspectors

 AutoResponder

 Composer

Use this page to compose a Request. You can clone a prior request by dragging

Parsed

Raw

Scratchpad

Options

GET

▼

<https://localhost/Cities>

User-Agent: Fiddler

Output

Show output from: Debug

```
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.AspNetCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.AspNetCore.App\5.0.0.0'.
Microsoft.Hosting.Lifetime: Information: Application started. Press Ctrl+C to shut down.
Microsoft.Hosting.Lifetime: Information: Hosting environment: Development
Microsoft.Hosting.Lifetime: Information: Content root path: C:\Code\Book\Chapter_01_HelloWorld\Chapter_01_HelloWorld
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.AspNetCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'Anonymously Hosted DynamicMethods Assembly'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.AspNetCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.AspNetCore.App\5.0.0.0'.
'iisexpress.exe' (CoreCLR: clrhost): Loaded 'C:\Program Files\dotnet\shared\Microsoft.NETCore.App\5.0.0.0'.
The thread 0x5c74 has exited with code 0 (0x0).

C:\Code\Book\Chapter_01_HelloWorld\Chapter_01_HelloWorld>dotnet run
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: https://localhost:5001
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: http://localhost:5000
info: Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
      Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
      Content root path: C:\Code\Book\Chapter_01_HelloWorld\Chapter_01_HelloWorld
```



Explorer (CTRL+Shift+E)



Search (CTRL+Shift+F)



Source Control (CTRL+Shift+G)



Run (CTRL+Shift+D)



Extensions (CTRL+Shift+X)



⊗ 0

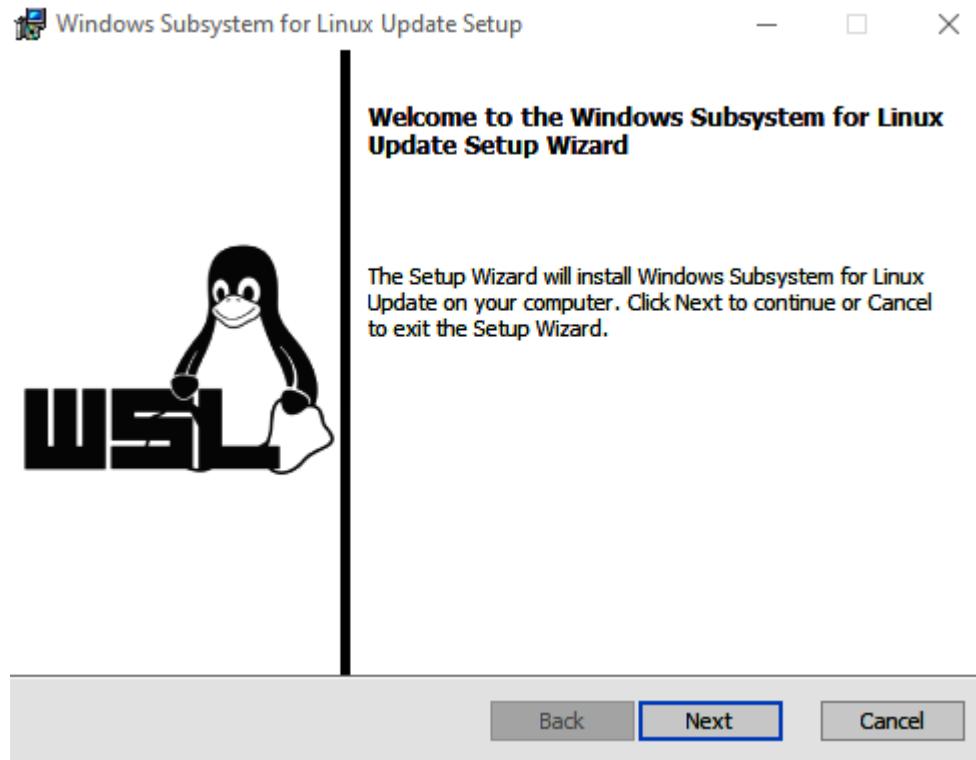
The screenshot shows a terminal window in Visual Studio Code with the following interface elements:

- Top Bar:** PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL.
- Terminal Header:** andreas@AH-BOOK2 ▶ C:\Code\Book\Chapter_01_HelloWorld □
- Extension Sidebar:** Shows the "C#" extension by Microsoft (ms-dotnettools.csharp) version 7.963.655, 5 stars, and "Repository". It includes links for "Set Color Theme", "Disable", and "Uninstall". A note says "This extension is recommended based on the files you recently opened." Below it are "Details", "Feature Contributions", and "Changelog" links.
- Terminal Content:**
 - Windows PowerShell tab: Microsoft Windows [Version 10.0.19645.1] (c) 2020 Microsoft Corporation. Med enereett. C:\Users\andreas>
 - cmd tab: Command prompt window showing the current directory as C:\Code\Repos\HelloFoo and the branch as master. The output of the "git status" command is displayed:

```
andreas@AH-BOOK2 ▶ C:\Code\Repos\HelloFoo ▶ ↵ master ↴
> git status
On branch master
Your branch is up to date with 'origin/master'.

nothing to commit, working tree clean
andreas@AH-BOOK2 ▶ C:\Code\Repos\HelloFoo ▶ ↵ master ↴
> |
```

Chapter 2: Cross-Platform Setup



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Ubuntu 20.04 LTS

Canonical Group Limited • Developer tools > Utilities

Share

Ubuntu 20.04 on Windows allows you to use Ubuntu Terminal and run Ubuntu command line utilities including bash, ssh, git, apt and many more.

[More](#)



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[Wish list](#)

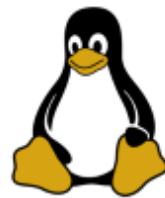
Ubuntu 20.04 LTS

```
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: andreas
New password:
```

```
andreas@AH-BOOK2: ~
Get:39 http://security.ubuntu.com/ubuntu focal-security/universe Translation-en [18.2 kB]
Get:40 http://security.ubuntu.com/ubuntu focal-security/universe amd64 c-n-f Metadata [1628 B]
Get:41 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 Packages [1172 B]
Get:42 http://security.ubuntu.com/ubuntu focal-security/multiverse Translation-en [548 B]
Get:43 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [116 B]
Fetched 17.1 MB in 4s (4743 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
79 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages will be upgraded:
accountsservice alsa-ucm-conf apparmor apport apt apt-utils bind9-dnsutils bind9-host bind9-libs busybox-initramfs
busybox-static ca-certificates curl dbus dbus-user-session dbus-x11 distro-info-data fwupd fwupd-signed
gir1.2-glib-2.0 glib-networking glib-networking-common glib-networking-services initramfs-tools initramfs-tools-bin
initramfs-tools-core landscape-common libaccountsservice0 libapparmor1 libapt-pkg6.0 libcurl3-gnutls libcurl4
libdbus-1-3 libfwupd2 libfwupdplugin1 libgirepository-1.0-1 libgnutls30 libjson-c4 libldap-2.4-2 libldap-common
libnetplan0 libnss-systemd libpam-systemd libproxy1v5 libpulse0 libpulsedsp libpython3.8 libpython3.8-minimal
libpython3.8-stdlib libseccomp2 libsqlite3-0 libsystemd0 libudev1 netplan.io open-iscsi openssh-client
openssh-server openssh-sftp-server pulseaudio-utils python3-apport python3-distupgrade python3-problem-report
python3-requests python3-update-manager python3.8 python3.8-minimal sosreport strace systemd systemd-sysv
systemd-timesyncd tzdata ubuntu-minimal ubuntu-release-upgrader-core ubuntu-server ubuntu-standard ubuntu-wsl udev
update-manager-core
79 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 26.1 MB of archives.
After this operation, 135 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```



Kontrollpanel



Linux



Papirkurv



Google Chrome
Snarvei
2,21 kB



> Linux > Ubuntu-20.04

^

Navn

boot

dev

etc

home

lost+found

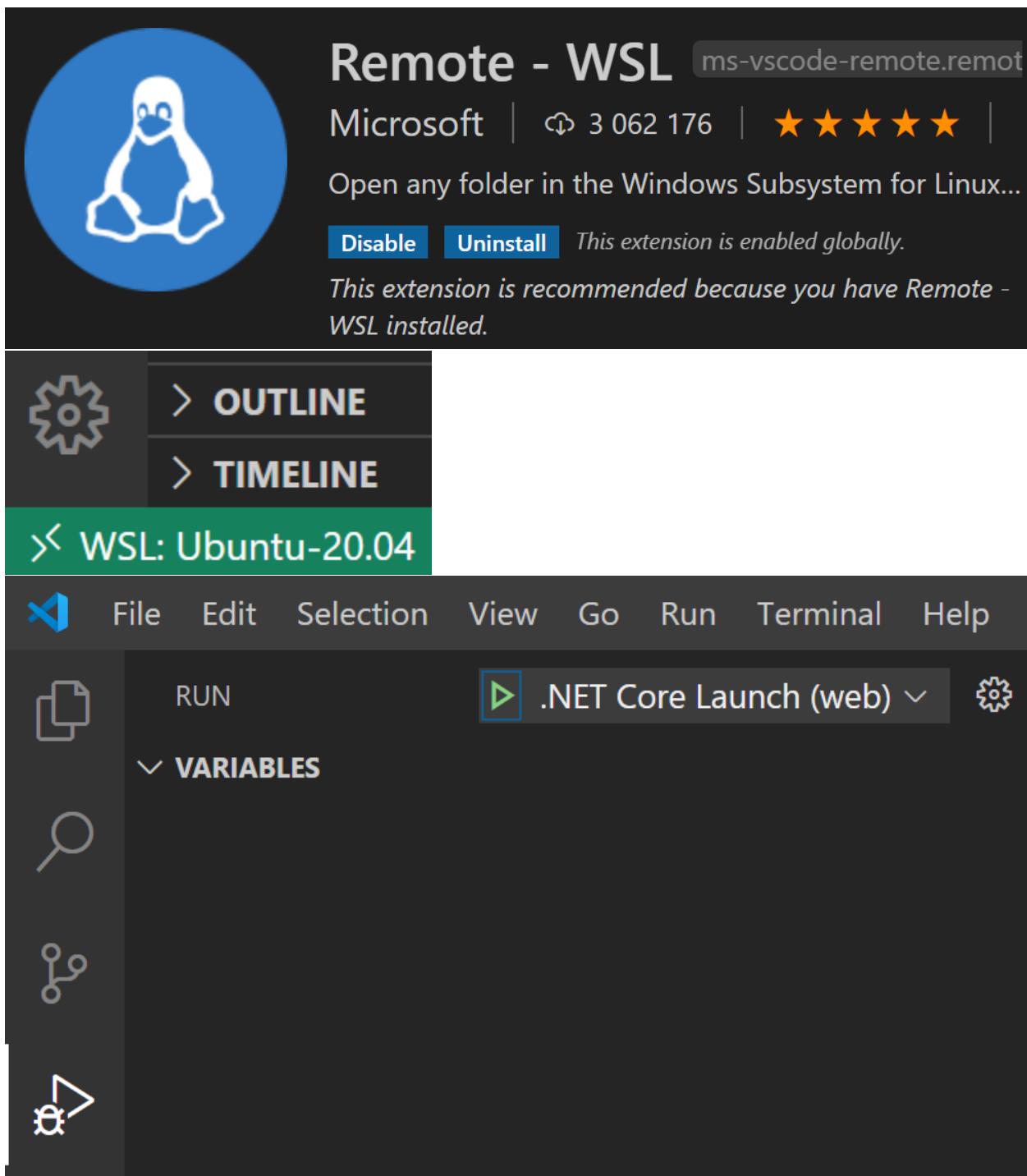
media

mnt

```
warn: Microsoft.AspNetCore.DataProtection.KeyManagement.XmlKey
      No XML encryptor configured. Key {93bbb3ea-ece7-448c-b40
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: https://localhost:5001
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: http://localhost:5000
info: Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
      Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
      Content root path: /mnt/c/Users/andreas/LinuxHelloWorld
```

LinuxHelloWorld [Home](#) [Privacy](#)

Running on Unix 4.19.104.0



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
Determining projects to restore...
Restored /mnt/c/Users/andreas/LinuxHelloWorld/LinuxHelloWorld.csproj (in 301 ms).
You are using a preview version of .NET. See: https://aka.ms/dotnet-core-preview
LinuxHelloWorld -> /mnt/c/Users/andreas/LinuxHelloWorld/bin/Debug/net5.0/LinuxHell
LinuxHelloWorld -> /mnt/c/Users/andreas/LinuxHelloWorld/bin/Debug/net5.0/LinuxHell
```

Terminal will be reused by tasks, press any key to close it.

The terminal window shows the following output:

```
Determining projects to restore...
Restored /mnt/c/Users/andreas/LinuxHelloWorld/LinuxHelloWorld.csproj (in 301 ms).
You are using a preview version of .NET. See: https://aka.ms/dotnet-core-preview
LinuxHelloWorld -> /mnt/c/Users/andreas/LinuxHelloWorld/bin/Debug/net5.0/LinuxHell
LinuxHelloWorld -> /mnt/c/Users/andreas/LinuxHelloWorld/bin/Debug/net5.0/LinuxHell
```

Below the terminal is a message: "Terminal will be reused by tasks, press any key to close it."

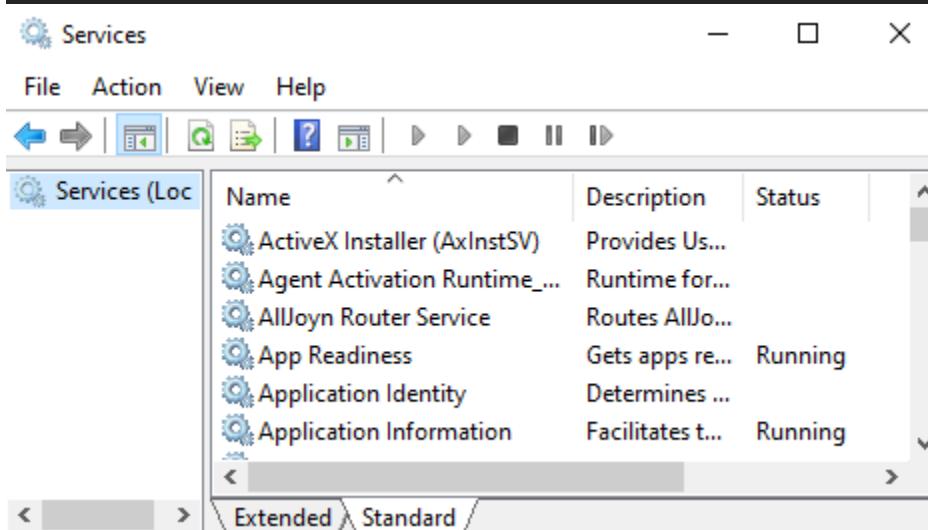
On the right side of the interface, there is a sidebar for the "C# (Extension)" by Microsoft. It shows the extension icon, name, rating (4.5 stars), and repository link. Below this are tabs for "Details", "Feature Contributions", and "Changelog". A note at the bottom states: "This extension is recommended based on the files you recently opened." and "C# for Visual Studio Code (powered by OmniSharp)".

At the bottom of the screen, there are several windows and panels:

- A "Shell Command" dropdown menu with options: "Install 'code' command in PATH" (recently used) and "Uninstall 'code' command from PATH" (other commands).
- An ".NET SDK" installer window titled "Velkommen til Microsoft .NET SDK 5.0.100-preview.6.20318.15 (x64)". It shows the "Innledning" (Introduction) step and includes sections for ".NET SDK", "Learn more about .NET", and "Installation note".
- A terminal window showing the command "dotnet --version" outputting "5.0.100-preview.6.20318.15".
- A "Projects" terminal window showing the generation of an HTTPS developer certificate.
- An "EXPLORER" panel showing the file structure of a "WEBAPP" project, including "Index.cshtml", "Privacy.cshtml", "Shared", "Views", and "Startup.csproj".
- A "SOLUTION" panel showing the project structure for "webapp", including "Connected Services", "Dependencies", "Controllers", "Models", "Properties", "Views", "wwwroot", "appsettings.json", "Program.cs", and "Startup.cs".
- A "RUN" panel with various configuration options like ".NET C", "Variables", "Breakpoints", "Watch", and "Call Stack".
- A status bar at the bottom center of the interface displays the text "Running on Unix 10.15.5".

```
< > Program.cs
No selection
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Threading;
5  using Microsoft.AspNetCore.Hosting; IDE0005: Using directive is unnecessary.
6  using Microsoft.Extensions.Configuration;
7  using Microsoft.Extensions.Hosting;
8  using Microsoft.Extensions.Logging;
9
10 namespace webapp
11 {
12     public class Program
13     {
14         public static void Main(string[] args)
15         {
16             CreateHostBuilder(args).Build().Run();
17         }
18
19         public static IHostBuilder CreateHostBuilder(string[] args) =>
20             Host.CreateDefaultBuilder(args)
21                 .ConfigureWebHostDefaults(webBuilder =>
22                 {
23                     webBuilder.UseStartup<Startup>();
24                 });
25     }
26 }
27
```

```
c:\Code\Book\Chapter_02_Workers>dotnet run
info: Chapter_02_Workers.Worker[0]
Worker running at: 07/01/2020 21:47:36 +02:00
info: Microsoft.Hosting.Lifetime[0]
Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
Content root path: c:\Code\Book\Chapter_02_Workers
info: Chapter_02_Workers.Worker[0]
Worker running at: 07/01/2020 21:47:37 +02:00
info: Chapter_02_Workers.Worker[0]
Worker running at: 07/01/2020 21:47:38 +02:00
```



C:\...\Users\andreas cmd andreas@AH-BOOK2: [11:31]

```
> $cert = New-SelfSignedCertificate -Type Custom -Subject "CN=Chapter_2_Certificate" -TextExtension @("2.5.29.37={text}1.3.6.1.5.5.7.3.3") -KeyUsage DigitalSignature -KeyAlgorithm RSA -KeyLength 2048 -NotAfter (Get-Date).AddYears(2) -CertStoreLocation "Cert:\CurrentUser\My"
andreas@AH-BOOK2 [11:37]
> $cert.Thumbprint
DEAF2B8A4864C51B5BEEFEF7BADA7CB5C6DAE995
andreas@AH-BOOK2 [11:37]
> |
```

Certificates - Current User

	Issued To	Issued By
Personal	Chapter_2_Certificate	Chapter_2_Certificate
Certificates	localhost	localhost
Trusted Root Certification	S-1-12-1-2860162662-13165555...	S-1-12-1-2860162662-1316555563...
Enterprise Trust		

C:\...\Users\andreas cmd andreas@AH-BOOK2: [11:37]

```
andreas@AH-BOOK2:/mnt/c/Users/andreas$ openssl req -x509 -newkey rsa:4096 -keyout myKey.pem -out cert.pem -days 365 -nodes
Can't load /home/andreas/.rnd into RNG
140700397748672:error:2406F079:random number generator:RAND_load_file:Cannot open file:../crypto/rand/randfile.c:88:Filename=/home/andreas/.rnd
Generating a RSA private key
.....+
writing new private key to 'myKey.pem'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:NO
State or Province Name (full name) [Some-State]:
Locality Name (eg, city) []:Oslo
Organization Name (eg, company) [Internet Widgits Pty Ltd]:Contoso
Organizational Unit Name (eg, section) []:
Common Name (e.g. server FQDN or YOUR name) []:Chapter_2_Certificate
Email Address []:
andreas@AH-BOOK2:/mnt/c/Users/andreas$ openssl pkcs12 -export -out keyStore.p12 -inkey myKey.pem -in cert.pem
Enter Export Password:
Verifying - Enter Export Password:
andreas@AH-BOOK2:/mnt/c/Users/andreas$ openssl x509 -in cert.pem -noout -fingerprint|
```

Certificate info

Certificate thumbprint: DEAF2B8A4864C51B5BEEFEF7BADA7CB5C6DAE995

Certificate subject: CN=Chapter_2_Certificate

Exception: Certificate not found

```
Chapter_02_Certificates.Controllers.HomeController+<>c_DisplayClass3_0.<Index>b_0() in HomeController.cs
+    42.             throw new Exception("Certificate not found");
System.Lazy<T>.ViaFactory(LazyThreadSafetyMode mode)
System.Lazy<T>.ExecutionAndPublication(LazyHelper executionAndPublication, bool useDefaultConstructor)
System.Lazy<T>.CreateValue()
System.Lazy<T>.get_Value()
Chapter_02_Certificates.Controllers.HomeController.Index() in HomeController.cs
+    45.             var myCert = SigningCredentials.Value;
```

```
andreas@AH-BOOK2:~$ ls -l
total 20
-rw-r--r-- 1 andreas andreas 1992 Jul 12 14:27 cert.pem
drwxr-xr-x 3 andreas andreas 4096 Jun 30 18:35 dotnet_install
-rw----- 1 andreas andreas 4181 Jul 12 14:27 keyStore.p12
-rw----- 1 andreas andreas 3272 Jul 12 14:26 myKey.pem
andreas@AH-BOOK2:~$ |
```

Certificate info

Certificate thumbprint: EC2E03FAC84E570CADE1020E08165279AD79A59B

Certificate subject: CN=Chapter_02_Certificates, O=Contoso, L=Oslo, S=Some-State, C=NO

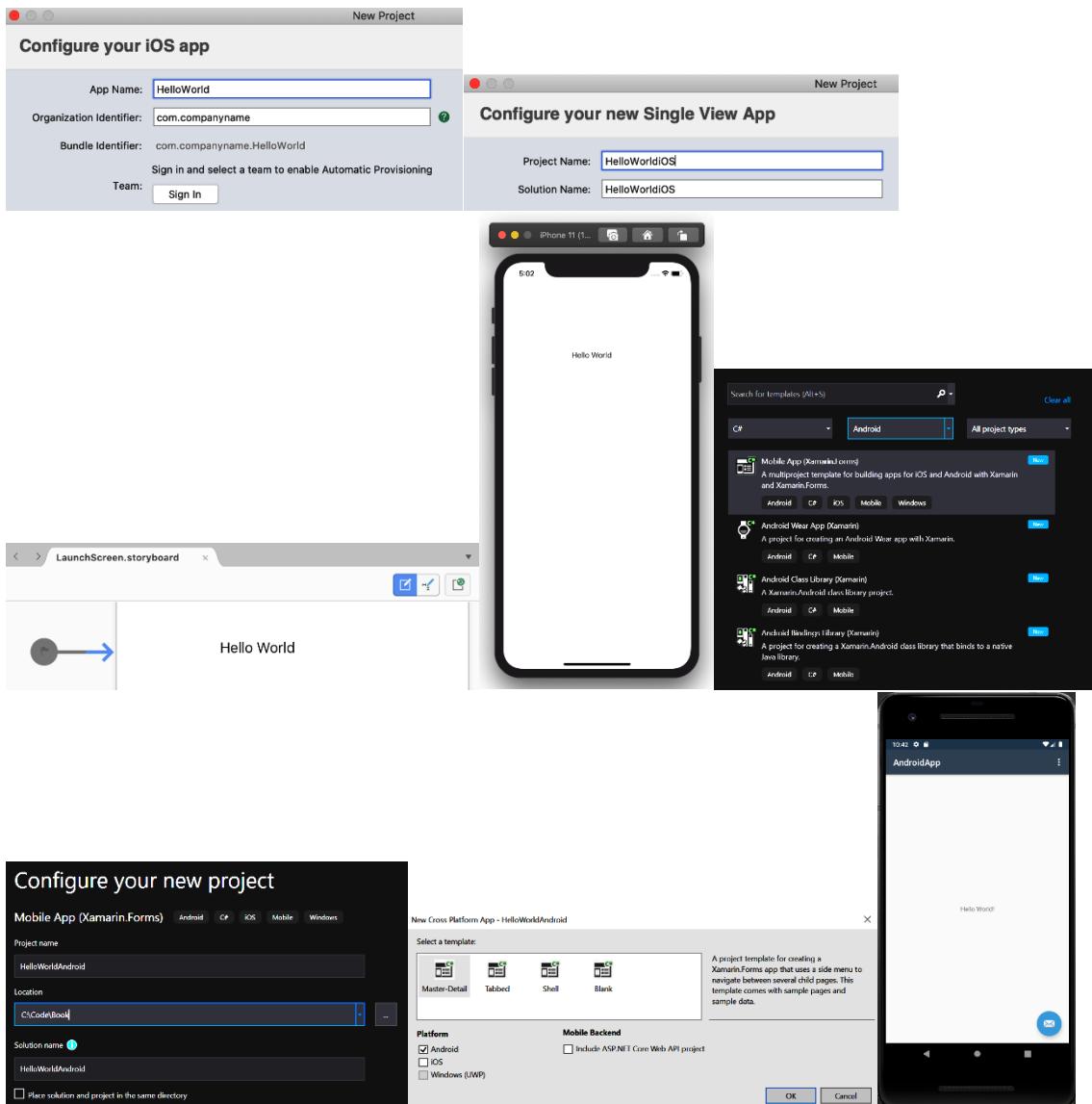
Command	Size
dotnet publish	6.5 MB
dotnet publish -r win-x64	175 MB
dotnet publish -r linux-arm64	228 MB



Mobile development with .NET

Build cross-platform applications for iOS, Android or Windows using Xamarin.





```
andreas@AH-BOOK2:~$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
  qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
      inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
      inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: bond0: <BROADCAST,MULTICAST,MASTER> mtu 1500 qdisc noop state DOWN group default
  qlen 1000
    link/ether 8e:16:82:86:c3:b4 brd ff:ff:ff:ff:ff:ff
3: dummy0: <BROADCAST,NOARP> mtu 1500 qdisc noop state DOWN group default qlen 1000
  link/ether 92:37:7d:7e:84:7e brd ff:ff:ff:ff:ff:ff
4: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default
  qlen 1000
    link/ether 00:15:5d:37:a5:a9 brd ff:ff:ff:ff:ff:ff
      inet 172.28.88.220/20 brd 172.28.95.255 scope global eth0
        valid_lft forever preferred_lft forever
      inet6 fe80::215:5dff:fe37:a5a9/64 scope link
        valid_lft forever preferred_lft forever
5: sit0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000
  link/sit 0.0.0.0 brd 0.0.0.0
andreas@AH-BOOK2:~$ |
```

```
C:\Code\Book>ssh andreas@172.28.88.220
andreas@172.28.88.220's password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 4.19.104-microsoft-standard x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage
```

```
System information as of Mon Jul 13 00:10:48 CEST 2020
```

System load: 0.0	Processes: 28
Usage of /: 0.9% of 250.98GB	Users logged in: 0
Memory usage: 18%	IPv4 address for eth0: 172.28.88.220
Swap usage: 0%	

```
0 updates can be installed immediately.
0 of these updates are security updates.
```

```
Last login: Sun Jul 12 23:59:35 2020 from 172.28.80.1
andreas@AH-BOOK2:~$ |
```

Attach to Process

Connection type: **SSH**

Connection target: **andreas@172.28.88.220**

Attach to: Managed (.NET Core for Unix) code [Select...](#)

Available processes

Process	ID	Title	Type	User Name	Session
-bash	25944			andreas	0
-bash	24072			andreas	0
-bash	4396			andreas	0
bash	248	bash /home/andreas/.vscode-server/extensions...		andreas	0
bash	163	/bin/bash		andreas	0
dotnet	4714	/usr/share/dotnet/dotnet exec /usr/share/dotn...		andreas	0
dotnet	4686	dotnet exec /usr/share/dotnet/sdk/5.0.100-prev...		andreas	0
dotnet	4668	dotnet run		andreas	0
mono	255	/home/andreas/.vscode-server/extensions/ms-...		andreas	0
node	302	/home/andreas/.vscode-server/bin/d5e9aa0227...		andreas	0
node	150	/home/andreas/.vscode-server/bin/d5e9aa0227...		andreas	0
node	59	/home/andreas/.vscode-server/bin/d5e9aa0227...		andreas	0

Show processes from all users [Refresh](#)

Chapter 3: Dependency Injection

ASP.NET CORE

MVC/Razor/Blazor

Routing

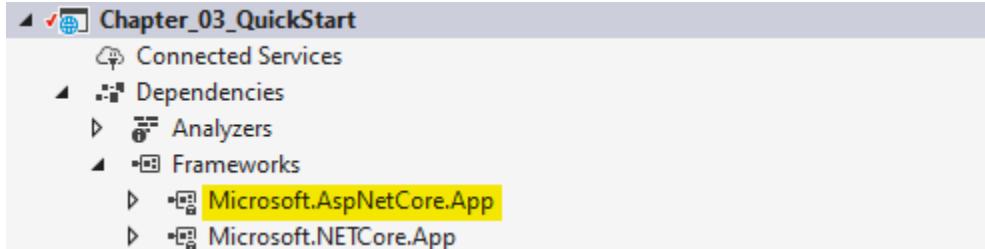
Logging

Configuration

ApplicationLifetime

Hosting

Dependency Injection



Home Page - QuickStart

localhost:44397

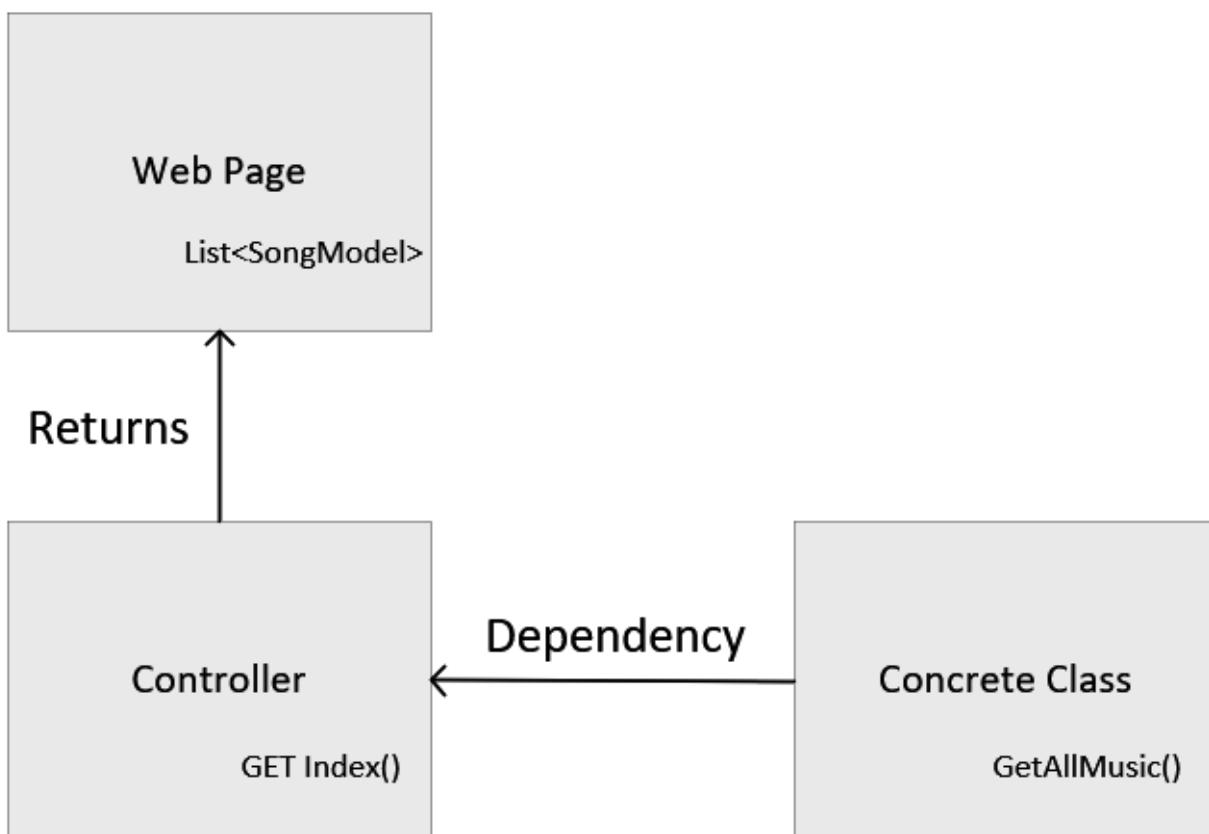
QuickStart Home Privacy

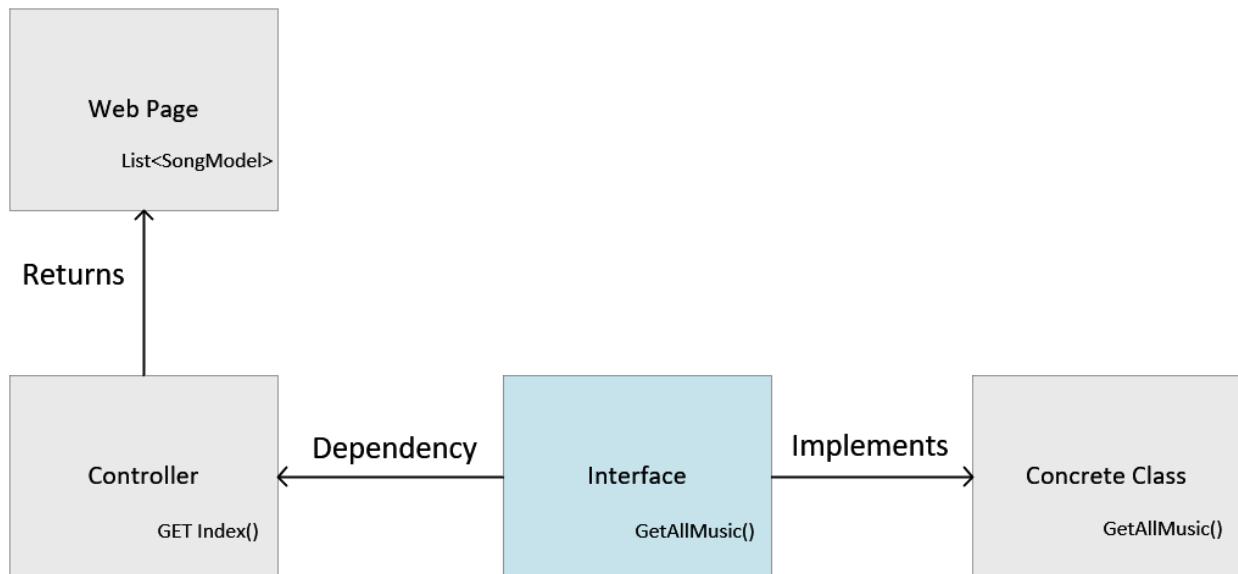
Welcome

Learn about [building Web apps with ASP.NET Core.](#)

Id	Title	Artist	Genre
1	Interstate Love Song	STP	Hard Rock
2	Man In The Box	Alice In Chains	Grunge
3	Blind	Lifehouse	Alternative
4	Hey Jude	The Beatles	Rock n Roll

© 2020 - QuickStart - [Privacy](#)





namespace Chapter_03_QuickStart.DataManager

```

{
    2 references
    public class MusicManager
    {
        1 reference
        public List<SongModel>
        {
            return new List<SongModel>
            {
                new SongModel("Interstate Love Song", "Eminem"),
                new SongModel("Man In The Box", "Eminem"),
                new SongModel("Blind", "Lifehouse"),
                new SongModel("Hallelujah", "Jeff Buckley")
            };
        }
    }
}

namespace Chapter_03_QuickStart.DataManager
{
    2 references
    public class MusicManager
}

```

Move to namespace...

Generate overrides...

Generate constructor 'MusicManager()'

Extract interface...

Add 'DebuggerDisplay' attribute

Quick Actions and Refactorings... Ctrl+.

- Rename... F2
- Remove and Sort Usings Ctrl+R, Ctrl+G
- Peek Definition Alt+F12
- Go To Definition F12
- Go To Base Alt+Home
- Go To Implementation Ctrl+F12
- Find All References Ctrl+K, R
- View Call Hierarchy Ctrl+K, Ctrl+T

> GetAllMusic()

ongModel>

```

{ Id = 1, Title = "Interstate Love Song"
{ Id = 2, Title = "Man In The Box",
{ Id = 3, Title = "Blind", Artist ="Life

```

Extract Interface

?

X

New interface name:

IMusicManager

Generated name:

Chapter_03_QuickStart.DataManager.IMusicManager

Select destination

 Add to current file New file name: IMusicManager.cs

Select public members to form interface

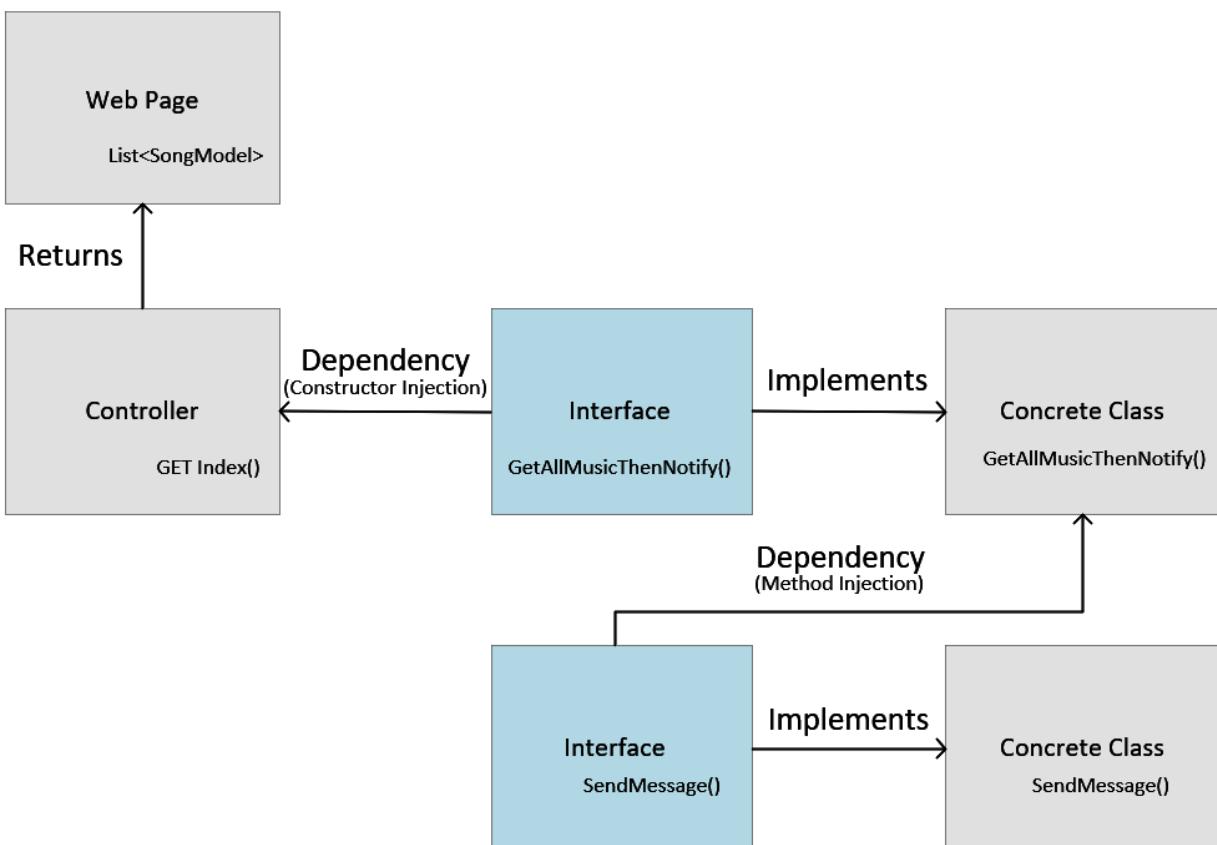
  GetAllMusic()

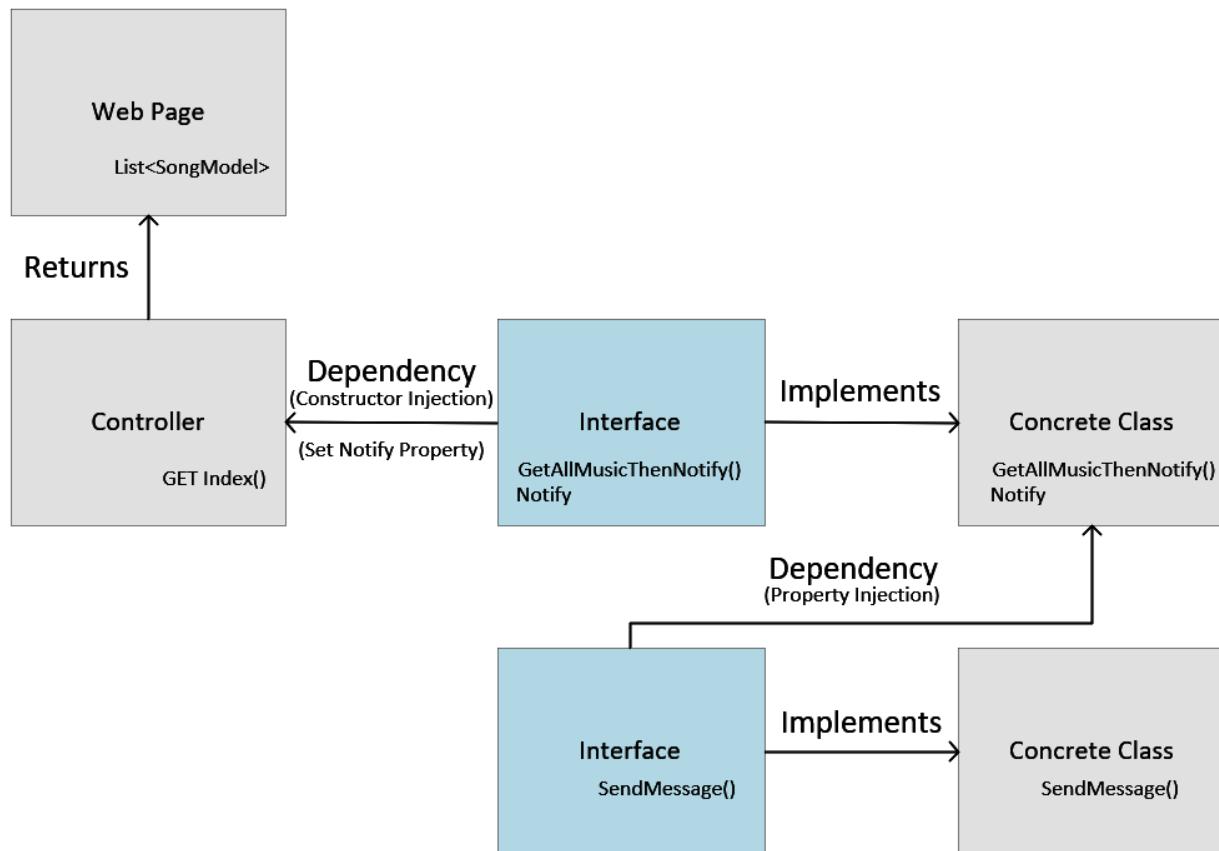
Select All

Deselect All

OK

Cancel





Welcome

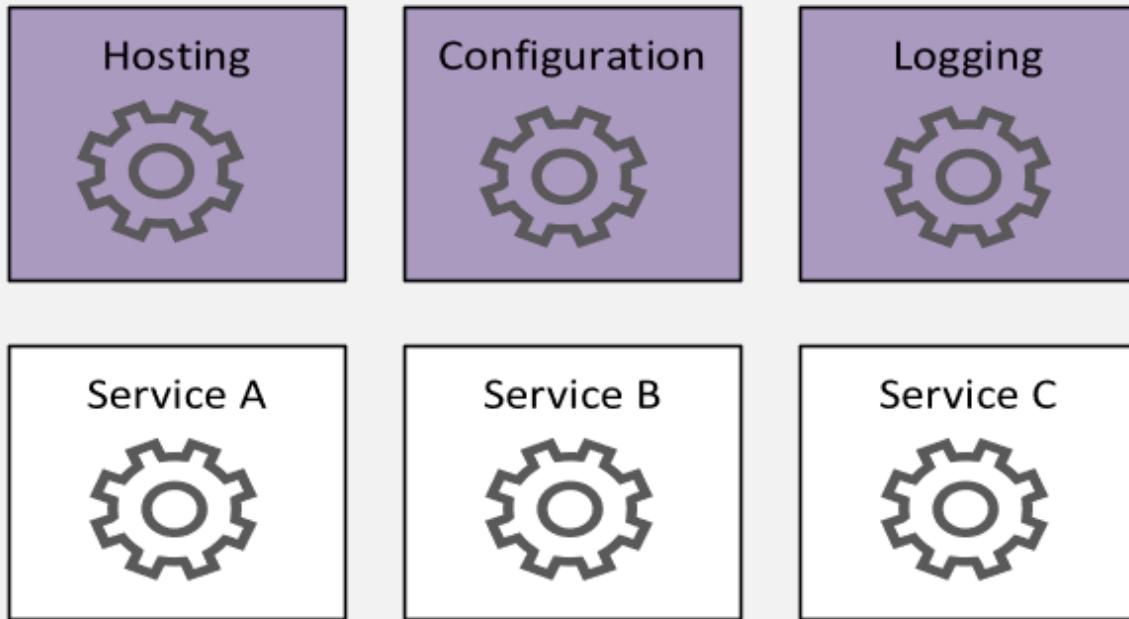
Learn about [building Web apps with ASP.NET Core](#).

Total Songs:

4

Id	Title	Artist	Genre
1	Interstate Love Song	STP	Hard Rock
2	Man In The Box	Alice In Chains	Grunge
3	Blind	Lifehouse	Alternative
4	Hey Jude	The Beatles	Rock n Roll

DI Container (IServiceCollection)



```
0 references
public IActionResult Index()
{
    var musicManagerReqId = _musicManager.RequestId;
    var insMusicManagerReqId = _insMusicManager.RequestId;
}

0 references
public IActionResult Index()
{
    var musicManagerReqId = _musicManager.RequestId;
    var insMusicManagerReqId = _insMusicManager.RequestId;
}

0 references
public IActionResult Index()
{
    var musicManagerReqId = _musicManager.RequestId;
    var insMusicManagerReqId = _insMusicManager.RequestId;
}
```

```
0 references
public IActionResult Index()
{
    var musicManagerReqId = _musicManager.RequestId;
    var insMusicManagerReqId = _insMusicManager.RequestId;
}

0 references
public IActionResult Index()
{
    var musicManagerReqId = _musicManager.RequestId;
    var insMusicManagerReqId = _insMusicManager.RequestId;
    insMusicManagerReqId {6fd5c68a-6dba-4bac-becc-5fc92c91b4b0} ↴
}

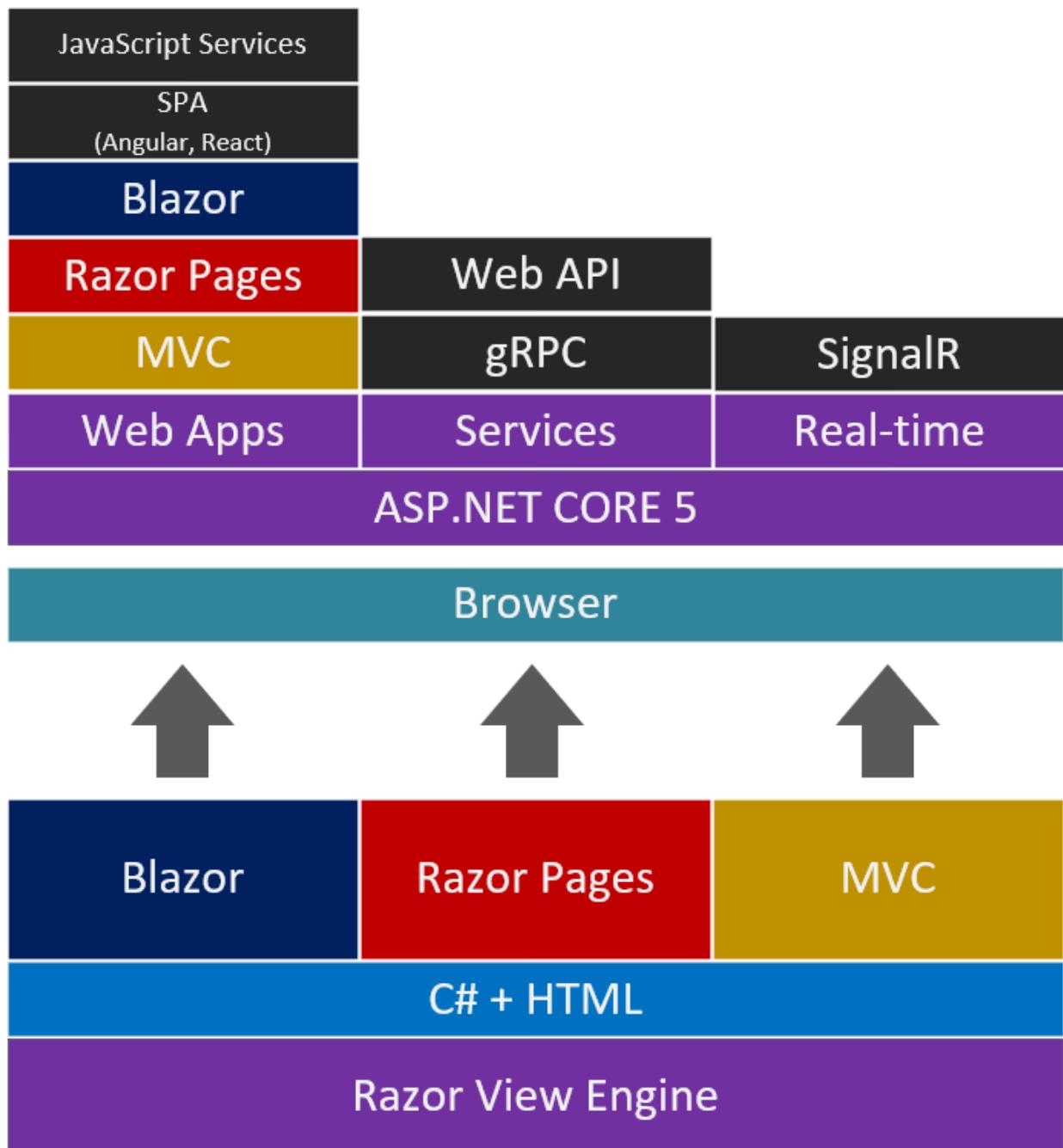
public HomeController	ILogger<HomeController> logger,
                           IMusicManager musicManager,
                           InstrumentalMusicManager insMusicManager)
{
    _logger = logger;
    _musicManager = musicManager;
    _insMusicManager = insMusicManager {Chapter_03_QuickStart.DataManager.AwesomeMusicManager} ↴
}

public HomeController	ILogger<HomeController> logger,
                           IMusicManager musicManager,
                           InstrumentalMusicManager insMusicManager)
{
    _logger = logger;
    _musicManager = musicManager;
    _insMusicManager = insMusicManager {Chapter_03_QuickStart.DataManager.MusicManager} ↴
}

0 references | 0 changes | 0 authors, 0 changes
public HomeController(IEnumerable<IMusicManager> musicManagers)
{
    _musicManagers = musicManagers; ≤ 1ms elapsed
}
    musicManagers {Chapter_03_QuickStart.DataManager.IMusicManager[2]} ↴
        [0] {Chapter_03_QuickStart.DataManager.MusicManager}
        [1] {Chapter_03_QuickStart.DataManager.AwesomeMusicManager}

0 references | Vincent Maverick S Durano, 3 days ago
```

Chapter 4: Razor View Engine



A screenshot of a web browser window titled "Home Page - LearningRazorSyntax". The address bar shows "localhost:44331". The page content includes a navigation bar with "LearningRazorSyntax", "Home", and "Privacy" links. Below this is a yellow header with the text "Home Page" and "Razor is Awesome!". The main content area has a large "Welcome" heading and a link to learn about building Web apps with ASP.NET Core. At the bottom, there's a copyright notice and a section titled "My favorite beers are:" with a list of beer names.

Home Page - LearningRazorSyntax

localhost:44331

LearningRazorSyntax Home Privacy

Home Page

Razor is Awesome!

Welcome

Learn about [building Web apps with ASP.NET Core](#).

© 2020 - LearningRazorSyntax - [Privacy](#)

My favorite beers are:

- Redhorse
- Furious
- Guinness
- Sierra
- Stella

List of beers:

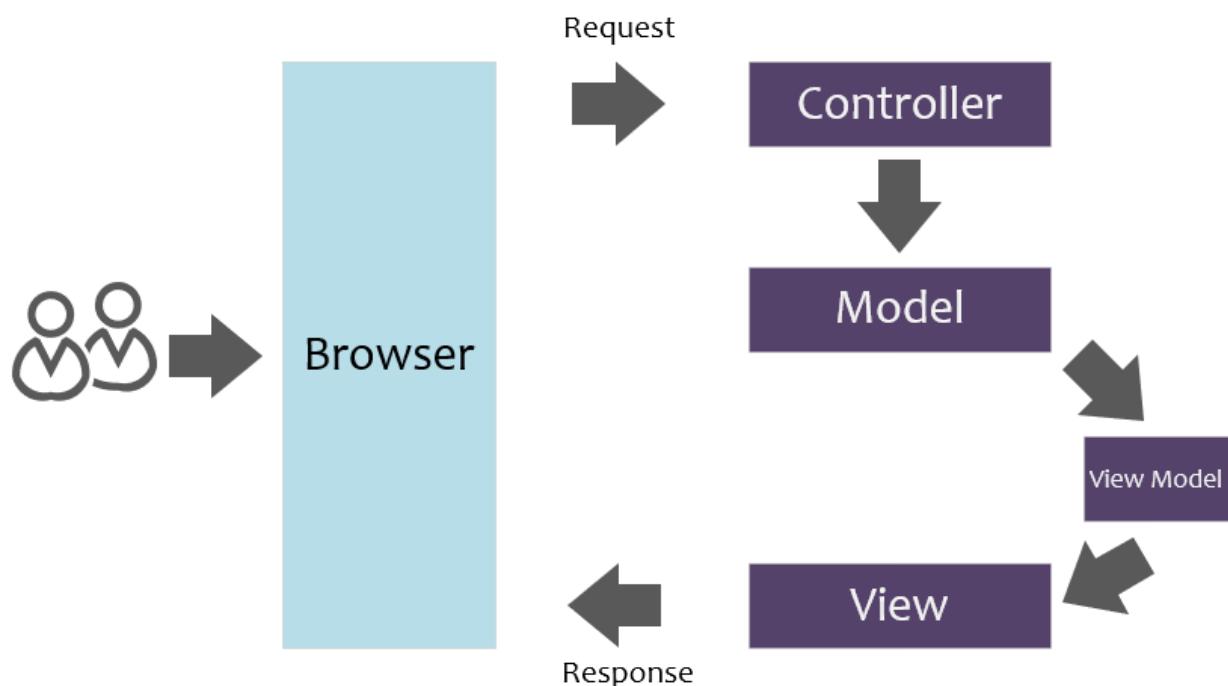
Id	Name	Type
1	Redhorse	Lager
2	Furious	IPA
3	Guinness	Stout
4	Sierra	Ale
5	Stella	Pilsner

My most favorite beer:

Beer Id : 1

Name : Redhorse

Type : Lager



Visual Studio 2019

Open recent

Get started



Clone a repository

Get code from an online repository like GitHub or Azure DevOps



Open a project or solution

Open a local Visual Studio project or .sln file



Open a local folder

Navigate and edit code within any folder



Create a new project

Choose a project template with code scaffolding to get started

[Continue without code →](#)

Create a new project

Recent project templates

A list of your recently accessed templates will be displayed here.

Search for templates (Alt+S) Clear all

All languages ▼ All platforms ▼ Web ▼

 **ASP.NET Core Web Application**
Project templates for creating ASP.NET Core web apps and web APIs for Windows, Linux and macOS using .NET Core or .NET Framework. Create web apps with Razor Pages, MVC, or Single Page Apps (SPA) using Angular, React, or React + Redux.
Cloud C# Linux macOS Service Web Windows

 **Blazor App**
Project templates for creating Blazor apps that run on the server in an ASP.NET Core app or in the browser on WebAssembly. These templates can be used to build web apps with rich dynamic user interfaces (UIs).
Cloud C# Linux macOS Web Windows

 **ASP.NET Web Application (.NET Framework)**
Project templates for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.
Cloud Visual Basic Web Windows

 **gRPC Service**

Back

Next

Configure your new project

ASP.NET Core Web Application

Cloud C# Linux macOS Service Web Windows

Project name

ToDo.MVC

Location

C:\Users\admin\source\repos\Books\ASPNET CORE 5\Chapter 04

...

Solution name i

ToDo.MVC

Place solution and project in the same directory

Back

Create

Create a new ASP.NET Core web application

.NET Core

Empty
An empty project template for creating an ASP.NET Core application. This template does not have any content in it.

API
A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service. This template can also be used for ASP.NET Core MVC Views and Controllers.

Web Application
A project template for creating an ASP.NET Core application with example ASP.NET Razor Pages content.

Web Application (Model-View-Controller)
A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

Angular
A project template for creating an ASP.NET Core application with Angular

React.js

Get additional project templates

Authentication
No Authentication
[Change](#)

Advanced

Configure for HTTPS

Enable Docker Support
(Requires Docker Desktop)

Enable Razor runtime compilation

Author: Microsoft
Source: Templates 5.0.0-preview.6.20318.15

ToDo.MVC

- Connected Services
- Dependencies
- Properties
- wwwroot
- Controllers
- HomeController.cs
- Models
- ErrorViewModel.cs
- Views
- Home
- Shared
 - _ViewImports.cshtml
 - _ViewStart.cshtml
- appsettings.json
- Program.cs
- Startup.cs

IIS Express

- IIS Express
- ToDo.MVC
- Azure Dev Spaces
- Web Browser (Google Chrome)
- Script Debugging (Disabled)
- Browse With...

ToDo.MVC Debug Properties

Home Page - ToDo.MVC

localhost:44377

ToDo.MVC Home Privacy

Welcome

Learn about [building Web apps with ASP.NET Core.](#)

ToDo.MVC

- Connected Services
- Dependencies
 - Analyzers
 - Frameworks
- Packages
 - Microsoft.EntityFrameworkCore (5.0.0)
 - Microsoft.EntityFrameworkCore.InMemory (5.0.0)

Add Razor View

View name: Index

Template: List

Model class: Todo (ToDo.MVC.Models)

Data context class:

Options:

Create as a partial view

Reference script libraries

Use a layout page:

(Leave empty if it is set in a Razor _viewstart file)

Add Cancel

Views

- Home
- Shared
- Todo
 - Index.cshtml
 - _ViewImports.cshtml
 - _ViewStart.cshtml

Index - ToDo.MVC

localhost:44377/todo

ToDo.MVC Home Privacy

Index

Create New

Id	TaskName	IsComplete	
1	Work on book chapter	<input type="checkbox"/>	Edit Details Delete
2	Create video content	<input type="checkbox"/>	Edit Details Delete

© 2020 - ToDo.MVC - [Privacy](#)

Create - ToDo.MVC

localhost:44377/todo/create

ToDo.MVC

Add

Todo

TaskName

IsComplete

Create

[Back to List](#)

The screenshot shows a Microsoft Edge browser window with the title "Index - ToDo.MVC". The address bar displays "localhost:44377/Todo". The page content is titled "ToDo.MVC" and features a large "Index" heading. Below it is a table listing three tasks:

Id	TaskName	IsComplete	
1	Work on book chapter	<input type="checkbox"/>	Edit Details Delete
2	Create video content	<input type="checkbox"/>	Edit Details Delete
3	Write Tech Blog	<input checked="" type="checkbox"/>	Edit Details Delete

At the bottom of the page, there is a copyright notice: "© 2020 - ToDo.MVC - [Privacy](#)".

Edit - ToDo.MVC

localhost:44377/Todo/Edit/3

Apps ProudMonkey

ToDo.MVC Home Privacy

Edit

Todo

Id

TaskName

IsComplete

Save

[Back to List](#)

© 2020 - ToDo.MVC - [Privacy](#)

ToDo.MVC

localhost:44377/Todo/Delete/2

Apps ProudMonkey

ToDo.MVC Home Privacy

Delete

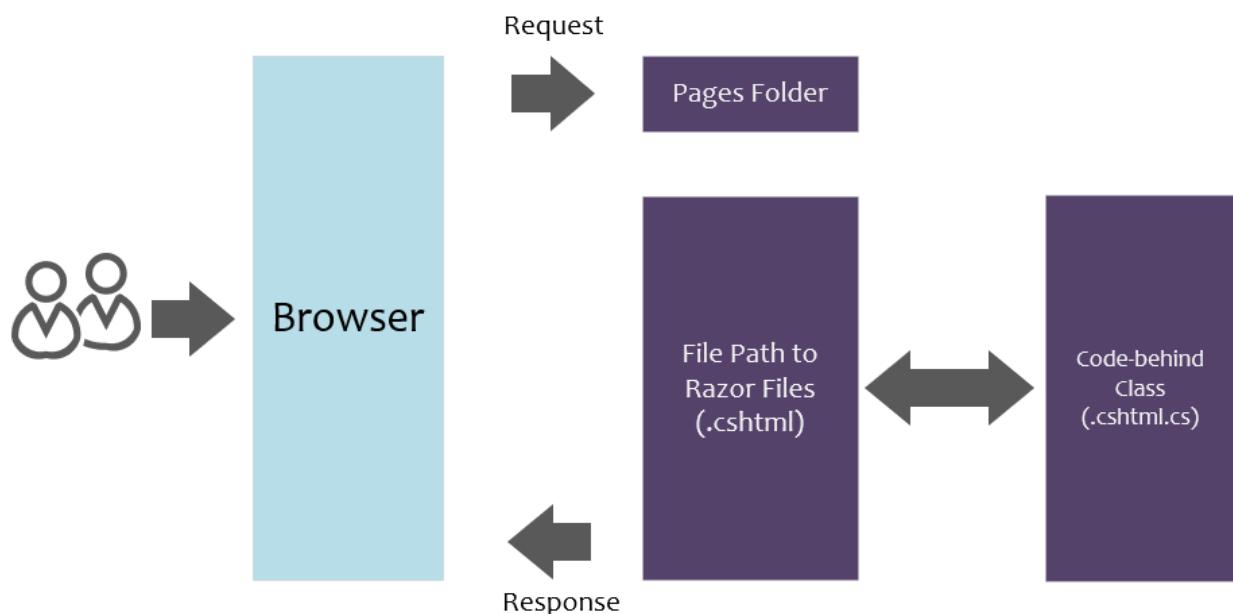
Are you sure you want to delete this?

Todo

Id	2
TaskName	Create video content
IsComplete	<input type="checkbox"/>

[Delete](#) | [Back to List](#)

© 2020 - ToDo.MVC - [Privacy](#)



Create a new ASP.NET Core web application

.NET Core ▾ ASP.NET Core 5.0 ▾

Empty
An empty project template for creating an ASP.NET Core application. This template does not have any content in it.

API
A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service. This template can also be used for ASP.NET Core MVC Views and Controllers.

Web Application
A project template for creating an ASP.NET Core application with example ASP.NET Razor Pages content.

Web Application (Model-View-Controller)
A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

Angular
A project template for creating an ASP.NET Core application with Angular

React.js

Get additional project templates

Authentication
No Authentication
[Change](#)

Advanced

Configure for HTTPS

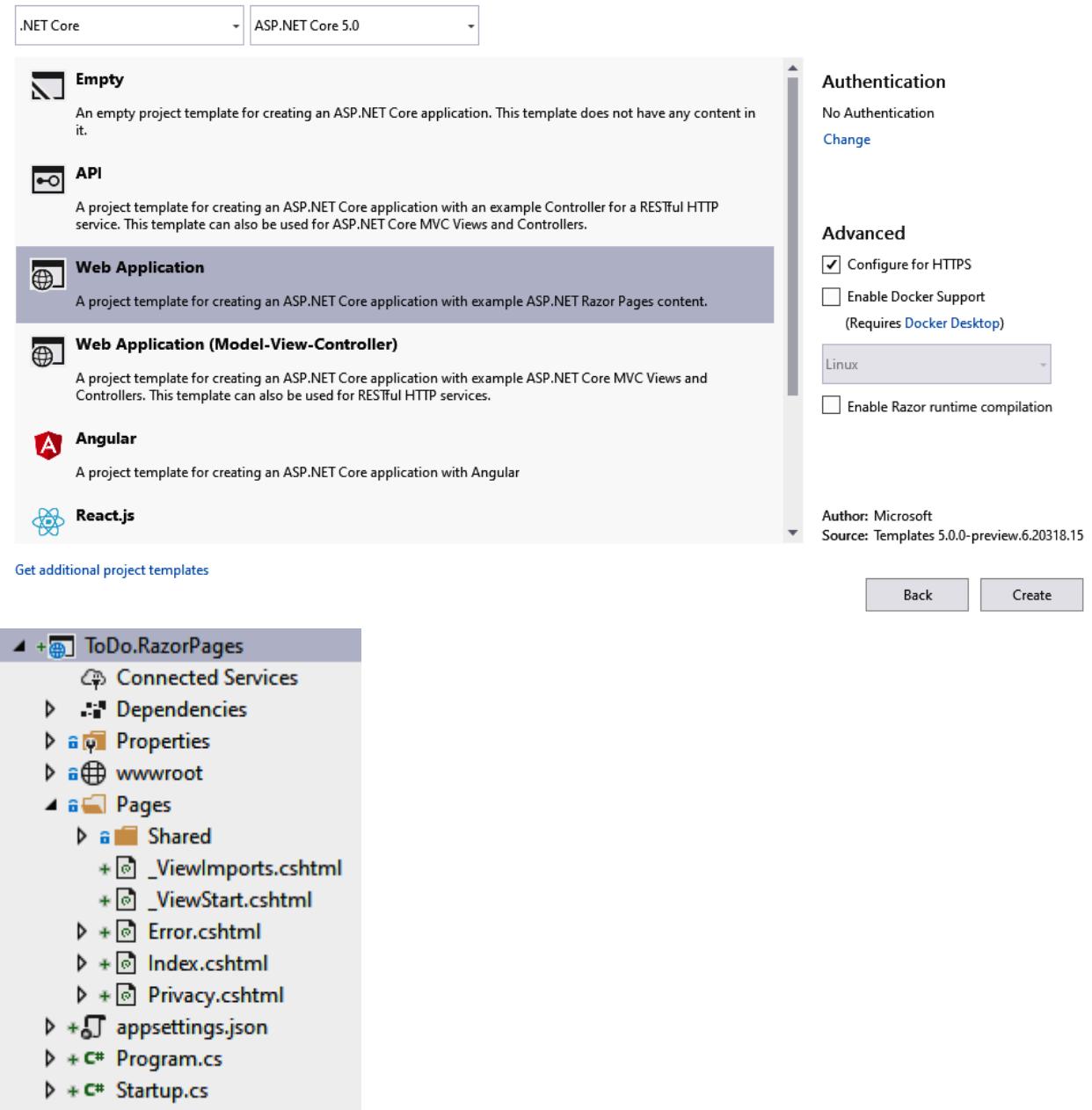
Enable Docker Support
(Requires [Docker Desktop](#))

Linux

Enable Razor runtime compilation

Author: Microsoft
Source: Templates 5.0.0-preview.6.20318.15

Back Create



The screenshot shows the 'Create a new ASP.NET Core web application' dialog. At the top, there are dropdown menus for '.NET Core' (set to 'ASP.NET Core 5.0') and 'Project Template'. Below these are several project template options:

- Empty**: An empty project template.
- API**: A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service.
- Web Application** (selected): A project template for creating an ASP.NET Core application with example ASP.NET Razor Pages content.
- Web Application (Model-View-Controller)**: A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers.
- Angular**: A project template for creating an ASP.NET Core application with Angular.
- React.js**: A project template for creating an ASP.NET Core application with React.js.

On the right side, there are sections for 'Authentication' (set to 'No Authentication') and 'Advanced' settings. The 'Advanced' section includes checkboxes for 'Configure for HTTPS', 'Enable Docker Support' (which requires Docker Desktop), and 'Enable Razor runtime compilation'. It also shows the target 'Linux' environment. At the bottom, there are 'Back' and 'Create' buttons, and a note indicating the author is Microsoft and the source is Templates 5.0.0-preview.6.20318.15.

The project structure for 'ToDo.RazorPages' is shown on the left, expanded to show:

- Connected Services
- Dependencies
- Properties
- wwwroot
- Pages
 - Shared
 - _ViewImports.cshtml
 - _ViewStart.cshtml
 - Error.cshtml
 - Index.cshtml
 - Privacy.cshtml
- appsettings.json
- Program.cs
- Startup.cs

The screenshot shows a Microsoft Edge browser window with the title "Index - ToDo.RazorPages". The address bar displays "localhost:44326/todos". The page content is titled "Index" and includes a table listing two tasks: "Work on book chapter" and "Create video content". Each task row has a checkbox for "IsComplete" and links for "Edit | Details | Delete".

ToDo.RazorPages Home Privacy

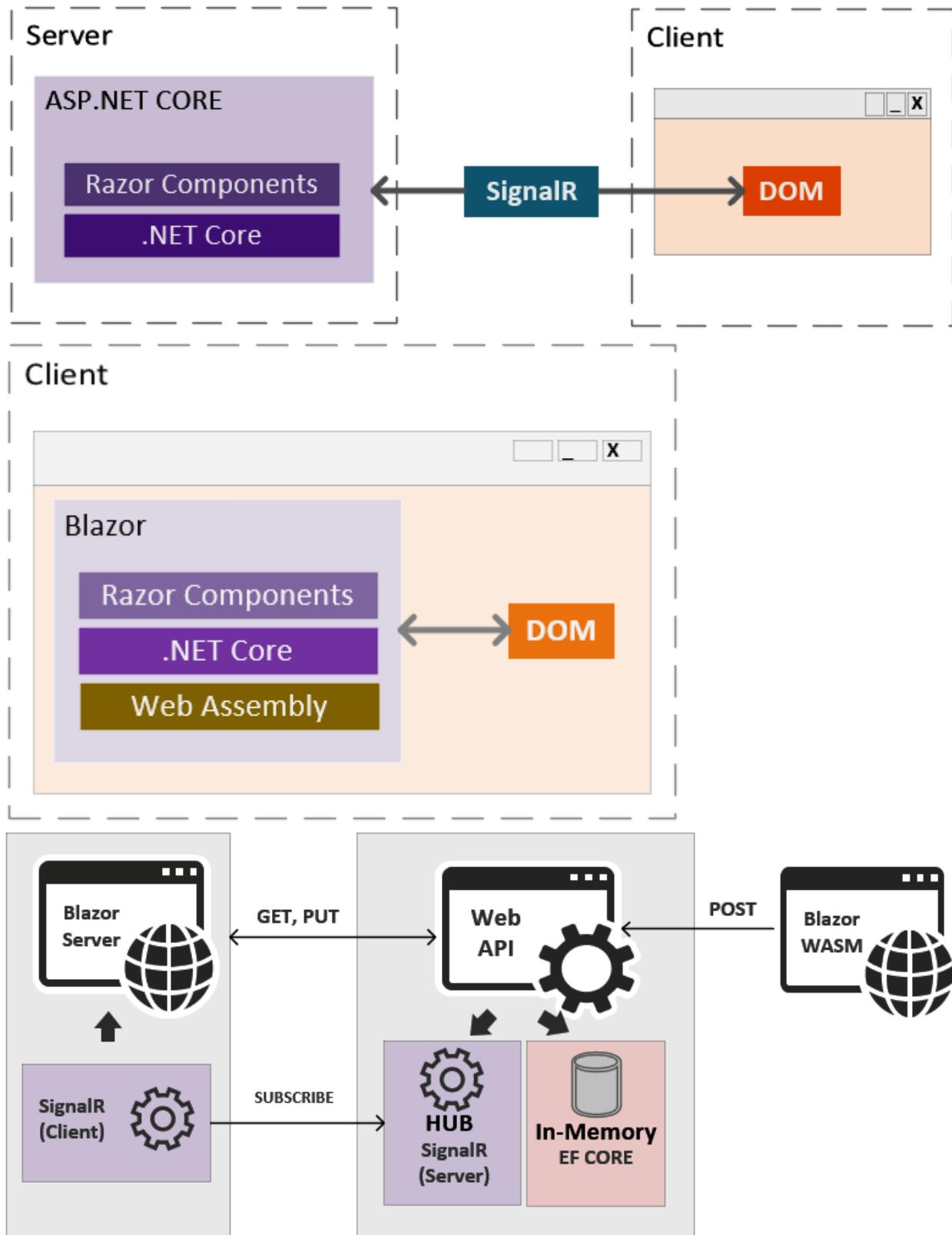
Index

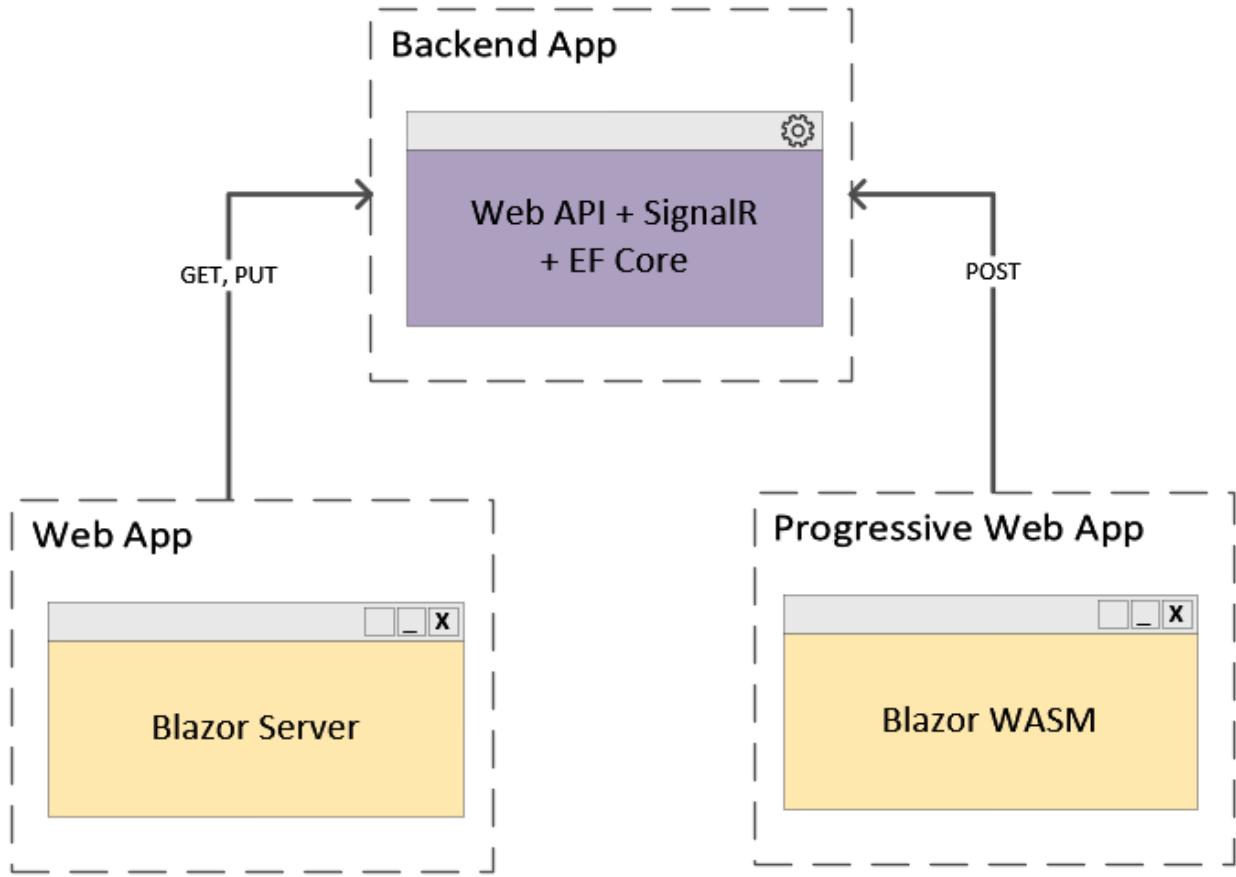
[Create New](#)

Id	TaskName	IsComplete	
1	Work on book chapter	<input type="checkbox"/>	Edit Details Delete
2	Create video content	<input type="checkbox"/>	Edit Details Delete

© 2020 - ToDo.RazorPages - [Privacy](#)

Chapter 5: Getting Started with Blazor





Configure your new project

ASP.NET Core Web Application

Cloud C# Linux macOS Service Web Windows

Project name

PlaceApi

Location

C:\Users\admin\source\repos\Books\ASPNET CORE 5\Chapter 05\Chapter_05_Bazor_Examples\

...

Solution name i

TouristSpot

Place solution and project in the same directory

Back

Create

Create a new ASP.NET Core web application

.NET Core .NET Core 5.0

Empty
An empty project template for creating an ASP.NET Core application. This template does not have any content in it.

API
A project template for creating an ASP.NET Core application with an example Controller for a RESTful HTTP service. This template can also be used for ASP.NET Core MVC Views and Controllers.

Web Application
A project template for creating an ASP.NET Core application with example ASP.NET Razor Pages content.

Web Application (Model-View-Controller)
A project template for creating an ASP.NET Core application with example ASP.NET Core MVC Views and Controllers. This template can also be used for RESTful HTTP services.

Angular
A project template for creating an ASP.NET Core application with Angular

React.js

Get additional project templates

Authentication
No Authentication [Change](#)

Advanced

Configure for HTTPS
 Enable Docker Support
(Requires Docker Desktop)
Linux

Author: Microsoft
Source: Templates 5.0.0-preview.6.20318.15

Back Create

Solution 'TouristSpot' (1 of 1 project)

- + **PlaceApi**
 - Connected Services
 - Dependencies
 - Properties
 - Controllers
 - + C# WeatherForecastController.cs
 - appsettings.json
 - + C# Program.cs
 - + C# Startup.cs
 - + C# WeatherForecast.cs

[Browse](#) [Installed](#) [Updates](#)

Search (Ctrl+L) Include prerelease

Newtonsoft.Json by James Newton-King, 594M downloads v12.0.3
Json.NET is a popular high-performance JSON framework for .NET

Microsoft.Extensions.Logging by Microsoft, 281M downloads v5.0.0-preview.7.20364.11
Prerelease Logging infrastructure default implementation for Microsoft.Extensions.Logging.
When using NuGet 3.x this package requires at least version 3.4.

Microsoft.Extensions.DependencyInjection by Microsoft, 267M+ downloads v5.0.0-preview.7.20364.11
Prerelease Default implementation of dependency injection for Microsoft.Extensions.DependencyInjection.

▲ PlaceApi

- ▷ Connected Services
- ▲ Dependencies
 - ▷ Analyzers
 - ▷ Frameworks
 - ▲ Packages
 - ▷ Microsoft.EntityFrameworkCore (5.0.0)
 - ▷ Microsoft.EntityFrameworkCore.InMemory (5.0.0)

The screenshot shows a browser window with the URL `localhost:44332/api/places`. The page displays a JSON object representing a place:

```
[{"id": 1, "name": "Coron Island", "location": "Palawan, Philippines", "about": "Coron is one of the top destinations for tourists to add to their wish list.", "reviews": 10, "imageData": "data:image/jpeg;base64,/9j/4AAQSkzJ..."}, {"id": 2, "name": "Grand Canyon", "location": "Arizona, US", "about": "It's a home to much of the immense Grand Canyon, with its layered bands of red rock revealing millions of geological history", "reviews": 300} ]
```

Below the browser, a Postman interface is visible for the same endpoint:

- Method: POST
- URL: `https://localhost:44332/api/places`
- Body tab is selected.
- Body content type: raw (JSON).
- Body content:

```
1 {"name": "Grand Canyon", "location": "Arizona, US", "about": "It's a home to much of the immense Grand Canyon, with its layered bands of red rock revealing millions of geological history", "reviews": 300}
```
- Headers tab (10 items listed):
 - Content-Type: application/json
 - Accept: application/json
 - Content-Type: multipart/form-data; boundary=----WebKitFormBoundary7MA4YWxkTrZu0gW
 - Accept: */*
 - Content-Type: application/x-www-form-urlencoded
 - Accept: application/json
 - Content-Type: application/json
 - Accept: application/json
 - Content-Type: application/json
 - Accept: application/json
- Tests, Settings, Params, Authorization tabs are also present.

Chapter 6: Exploring the Blazor Web Framework

Create a new project

Recent project templates

ASP.NET Core Web Application

C#

Console App (.NET Core)

C#

Search for templates (Alt+S)



Clear all

All languages

All platforms

Web

ASP.NET Core Web Application

Project templates for creating ASP.NET Core web apps and web APIs for Windows, Linux and macOS using .NET Core or .NET Framework. Create web apps with Razor Pages, MVC, or Single Page Apps (SPA) using Angular, React, or React + Redux.

Cloud

C#

Linux

macOS

Service

Web

Windows



Blazor App

Project templates for creating Blazor apps that run on the server in an ASP.NET Core app or in the browser on WebAssembly. These templates can be used to build web apps with rich dynamic user interfaces (UIs).

Cloud

C#

Linux

macOS

Web

Windows



ASP.NET Web Application (.NET Framework)

Project templates for creating ASP.NET applications. You can create ASP.NET Web Forms, MVC, or Web API applications and add many other features in ASP.NET.

Cloud

Visual Basic

Web

Windows

Back

Next

Create a new Blazor app

.NET 5.0



Blazor Server App

A project template for creating a Blazor server app that runs server-side inside an ASP.NET Core app and handles user interactions over a SignalR connection. This template can be used for web apps with rich dynamic user interfaces (UIs).



Blazor WebAssembly App

A project template for creating a Blazor app that runs on WebAssembly. This template can be used for web apps with rich dynamic user interfaces (UIs).

Authentication

No Authentication

[Change](#)

Advanced

Configure for HTTPS

Enable Docker Support

(Requires [Docker Desktop](#))

Linux

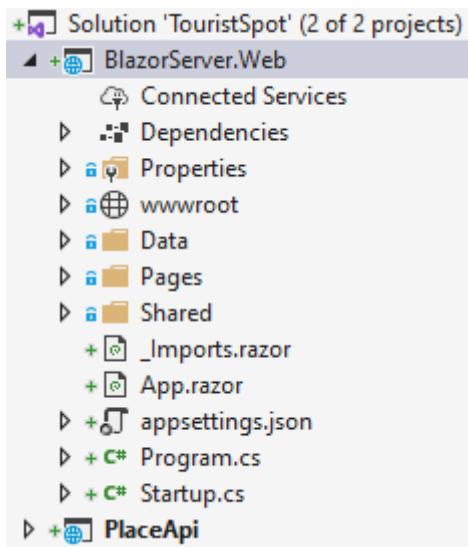
Author: Microsoft

Source: Templates 5.0.0-preview.6.20318.15

[Get additional project templates](#)

Back

Create



Main.razor

Featured Section

ViewTouristSpot.razor

EditTouristSpot.razor

What's New Section

Top Places Section

Solution 'TouristSpot' Property Pages

?

X

Configuration:

N/A

Platform:

N/A

Configuration Manager...

Common Properties

Startup Project

Project Dependencies

Code Analysis Settings

Debug Source Files

Configuration Properties

 Current selection Single startup project

PlaceApi

 Multiple startup projects:

Project	Action
BlazorServer.Web	Start
PlaceApi	Start

OK

Cancel

Apply

BlazorServer.Web

x +

← → C localhost:44335/main



ProudMonkey



BlazorServer.Web

About

Home

Counter

Fetch data

Tourist Spots

Featured Tourist Spot



Coron Island

Location: **Palawan, Philippines** Reviews: 10
Last Updated: 8/17/2020

Coron is one of the top destinations for tourists to add to their wish list.

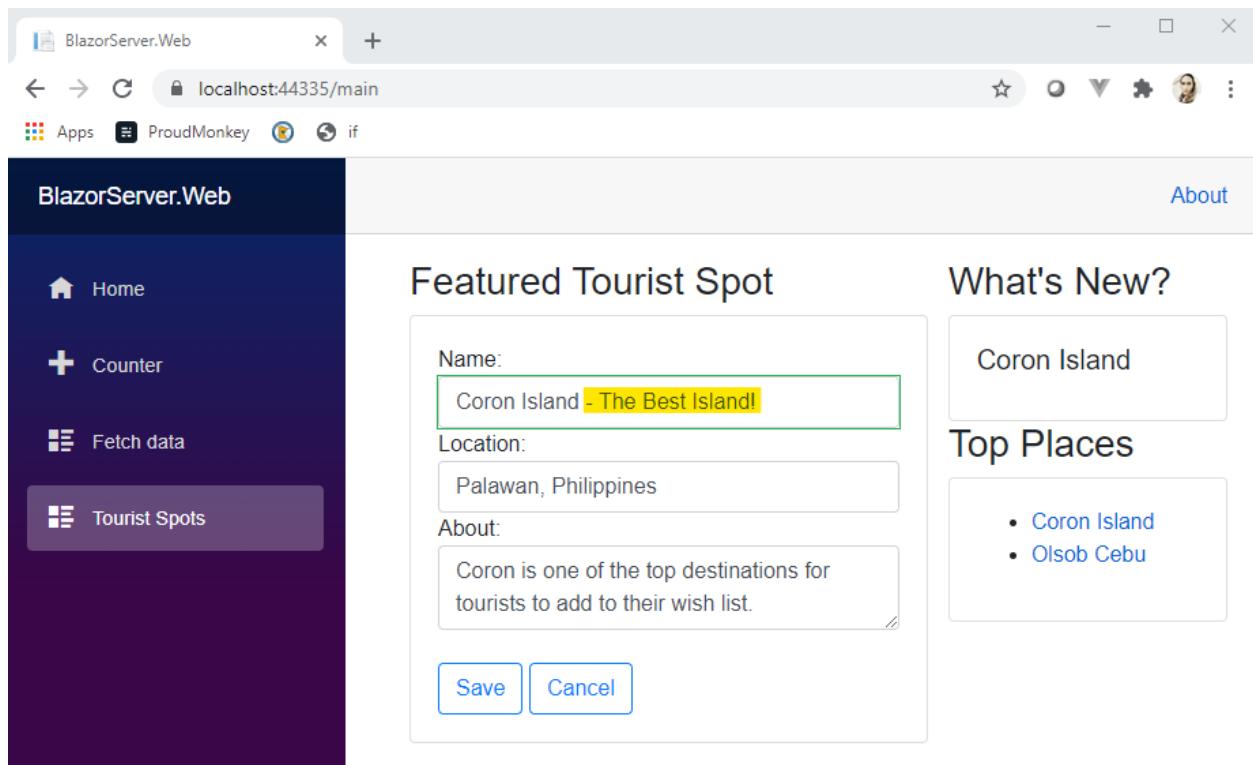
Edit

What's New?

Coron Island

Top Places

- Coron Island
- Olsob Cebu



BlazorServer.Web

localhost:44335/main

Apps ProudMonkey if

BlazorServer.Web

About

Home

Counter

Fetch data

Tourist Spots

Featured Tourist Spot

What's New?

Coron Island - The Best Island!

Top Places

- Coron Island - The Best Island!
- Olsob Cebu

Coron Island - The Best Island!

Location: Palawan, Philippines Reviews: 10 Last Updated: 8/17/2020

Coron is one of the top destinations for tourists to add to their wish list.

Edit

BlazorServer.Web

localhost:44335/main

Apps ProudMonkey if

BlazorServer.Web

About

Home Counter Fetch data Tourist Spots

Featured Tourist Spot



What's New?

Coron Island - The Best Island!

Top Places

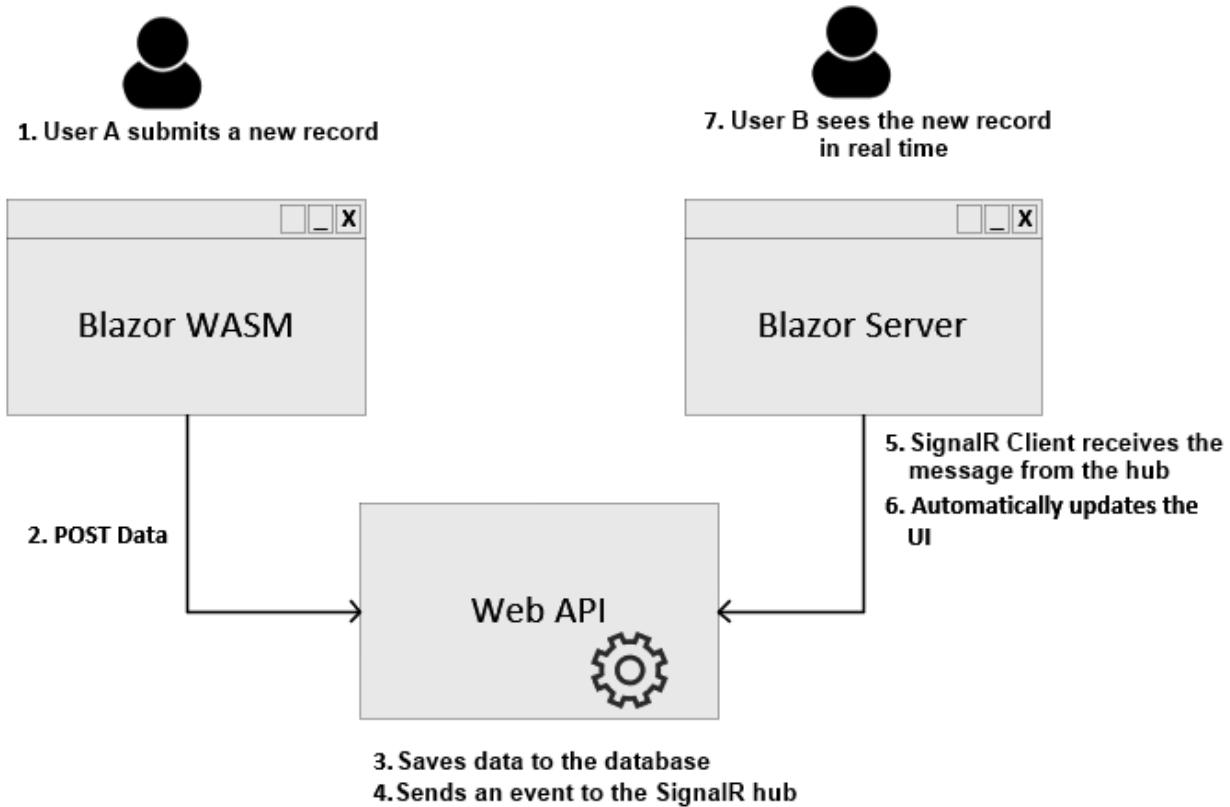
- Coron Island - The Best Island!
- Olsob Cebu

Olsob Cebu

Location: **Cebu, Philippines** Reviews: 3 Last Updated: 8/17/2020

Whale shark watching is the most popular tourist attraction in Cebu.

Edit



Create a new Blazor app

.NET 5.0

Blazor Server App
A project template for creating a Blazor server app that runs server-side inside an ASP.NET Core app and handles user interactions over a SignalR connection. This template can be used for web apps with rich dynamic user interfaces (UIs).

Blazor WebAssembly App
A project template for creating a Blazor app that runs on WebAssembly. This template can be used for web apps with rich dynamic user interfaces (UIs).

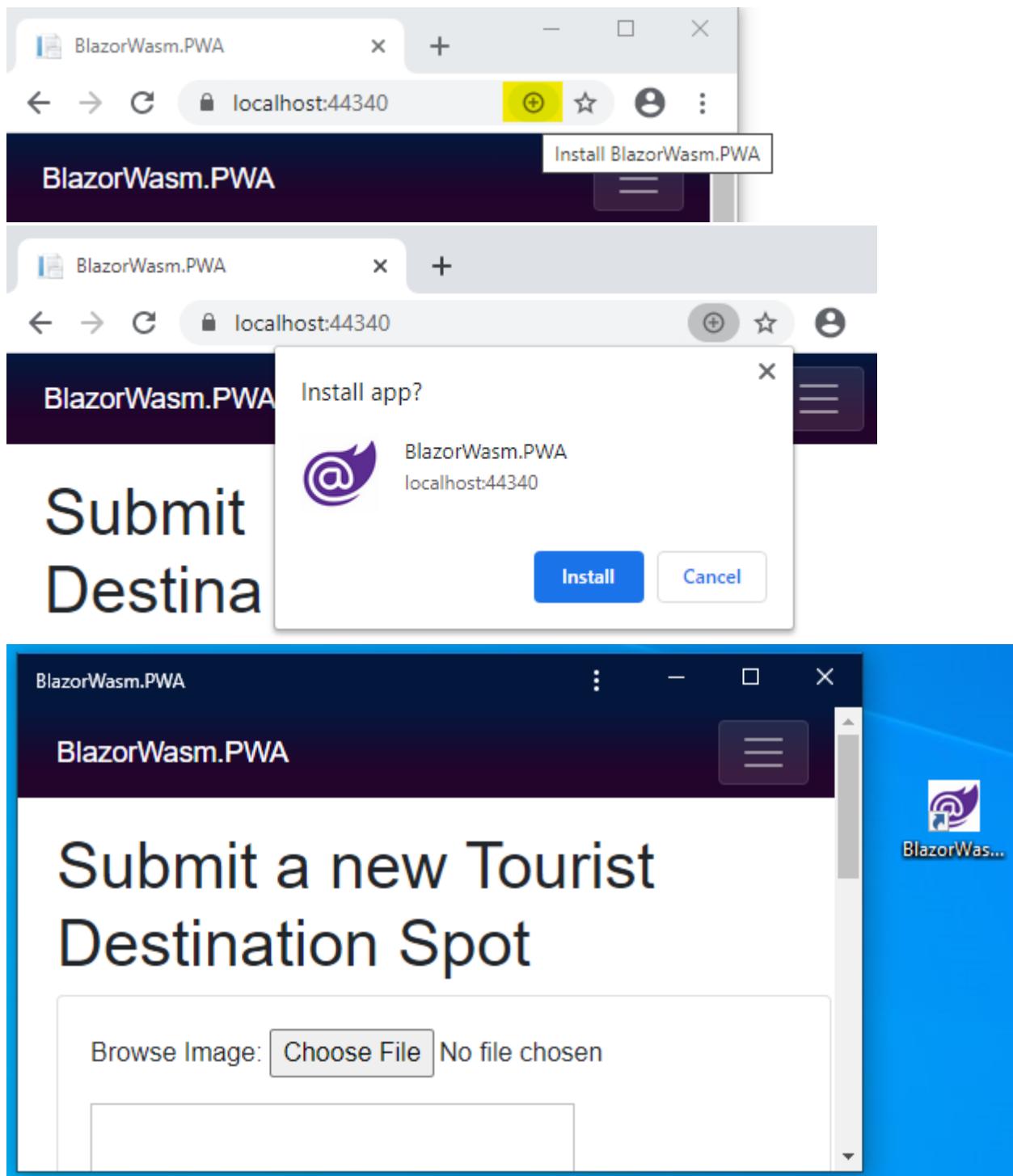
Authentication
No Authentication
[Change](#)

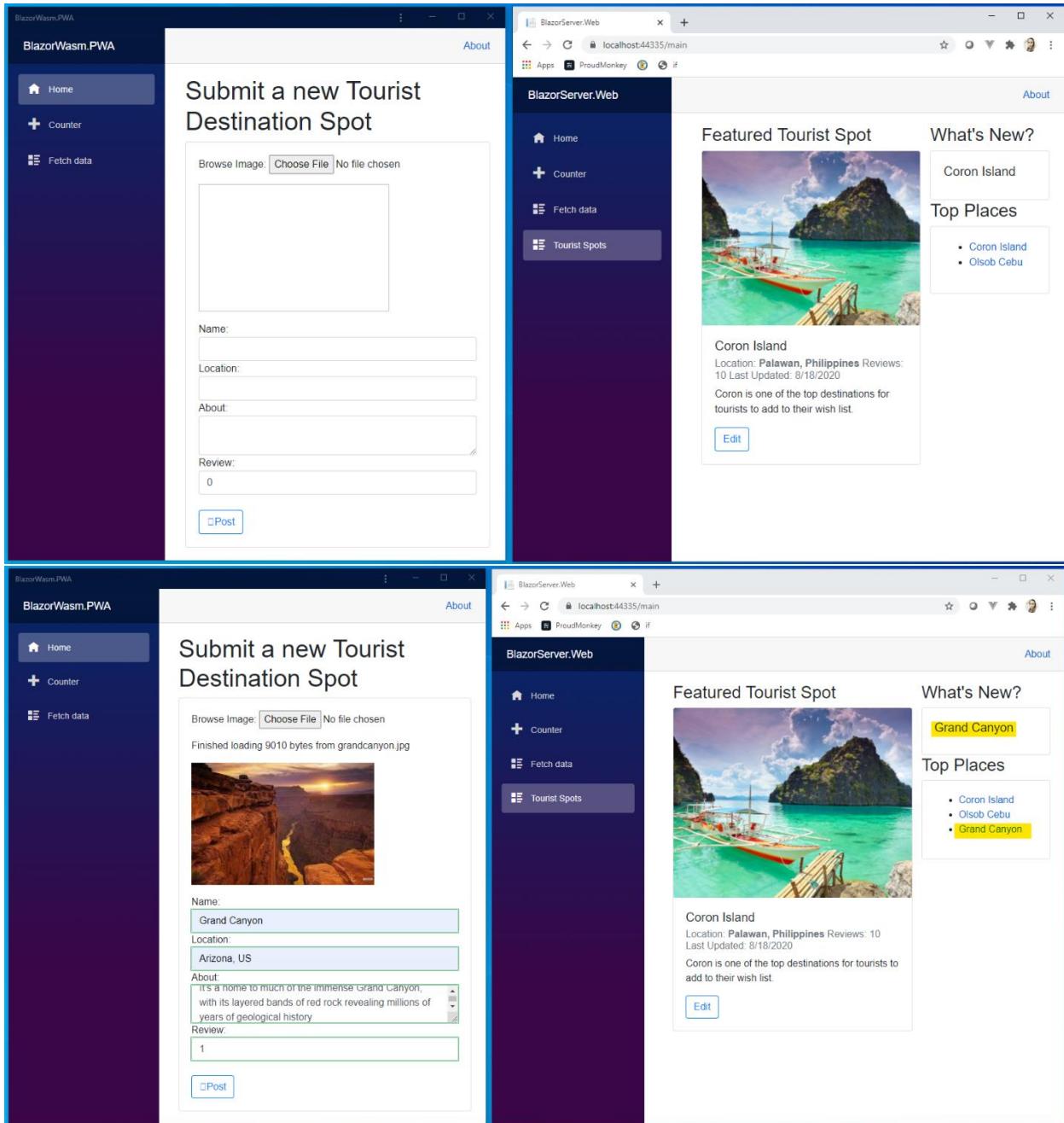
Advanced
 Configure for HTTPS
 Enable Docker Support
(Requires Docker Desktop)
 Linux
 ASP.NET Core hosted
 Progressive Web Application

Author: Microsoft
Source: Templates 5.0.0-preview.6.20318.15

Get additional project templates

Back Create





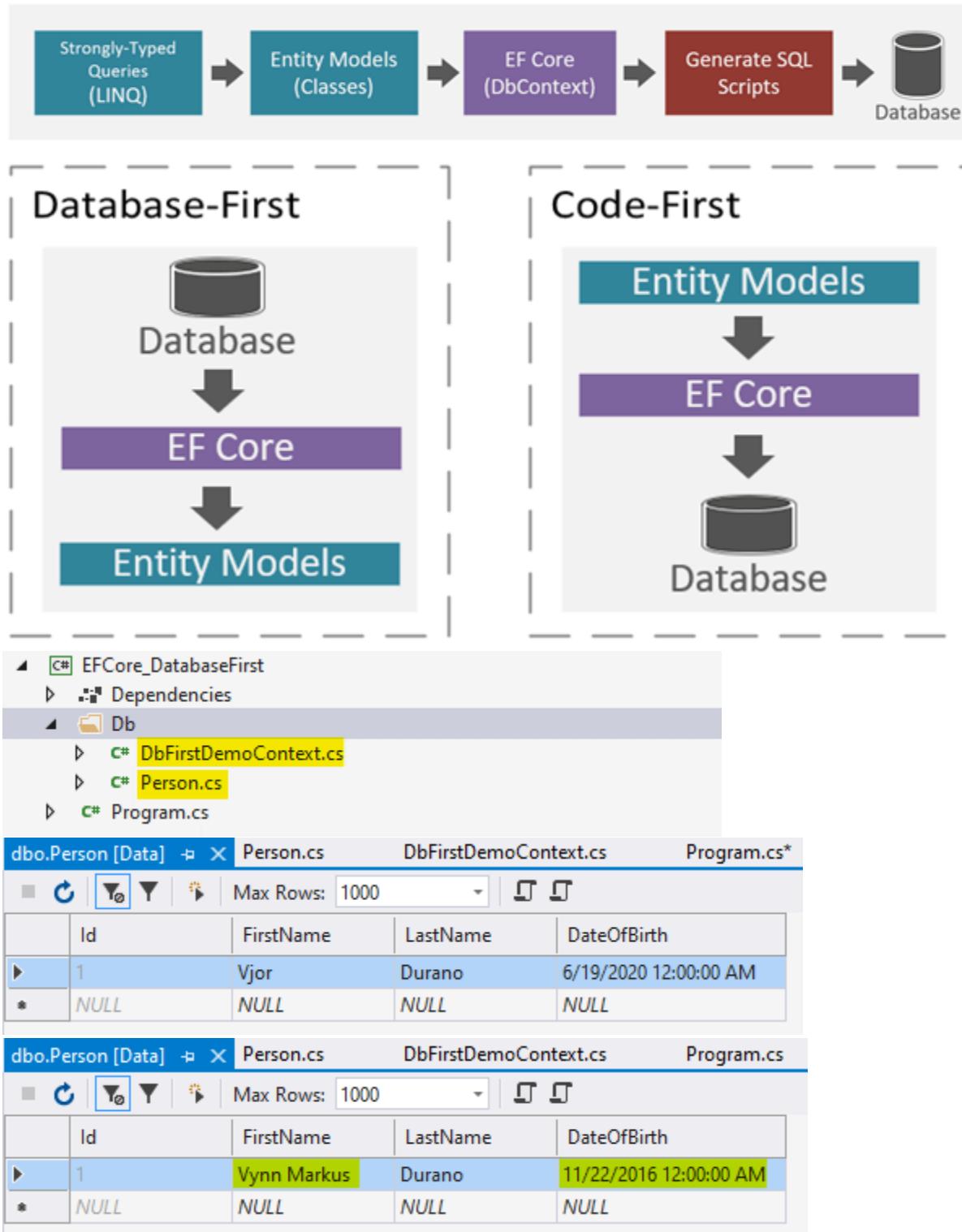
View Sites

- [PlaceApi](#)
- [BlazorServer.Web](#)
- [BlazorWasm.PWA](#)

[Show All Applications](#)

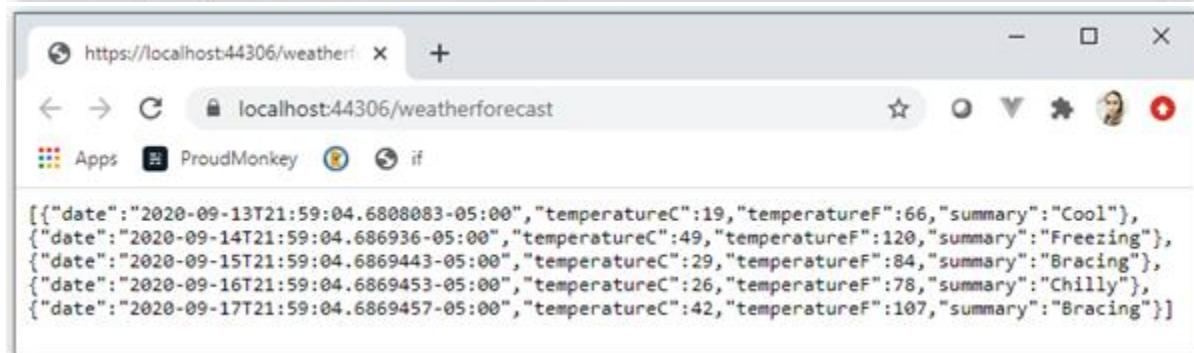
[Exit](#)

Chapter 7: APIs and Data Access



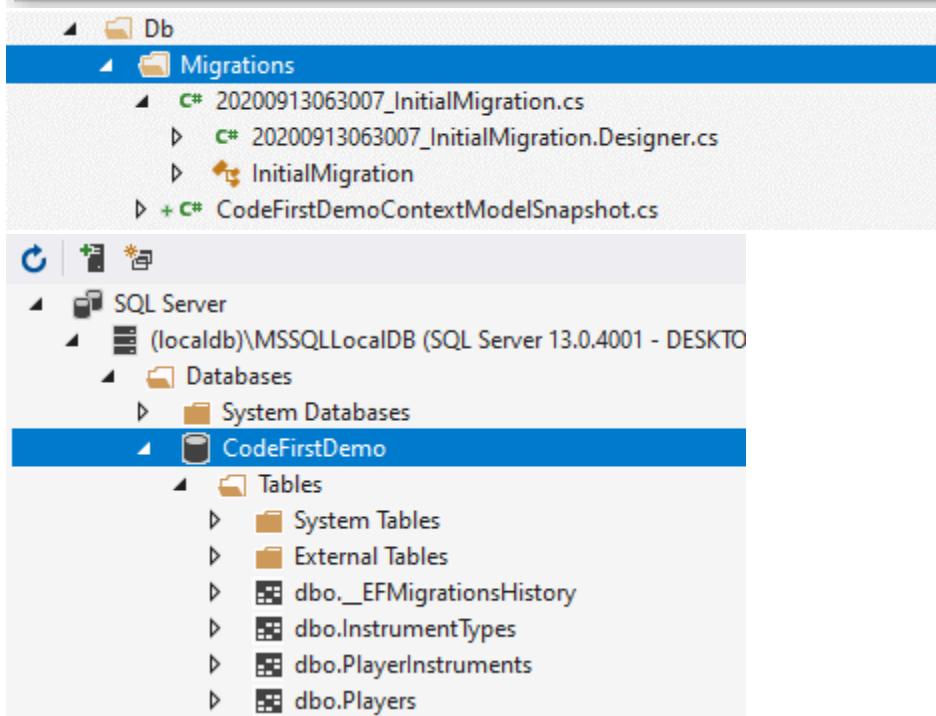
```
Microsoft Visual Studio Debug Console
FullName: Vynn Markus Durano
Birth Date: 11/22/2016
Record count: 1

C:\Users\admin\source\repos\Books\ASPNET CORE 5\Chapter 07\Chapter_07_API_EFCore_Examples\EFCore_DatabaseFirst\bin\Debug\net5.0\EFCore_DatabaseFirst.exe (process 27128) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```



A screenshot of a web browser window showing the URL `localhost:44306/weatherforecast`. The page displays a JSON array of weather forecast data:

```
[{"date": "2020-09-13T21:59:04.6808083-05:00", "temperatureC": 19, "temperatureF": 66, "summary": "Cool"}, {"date": "2020-09-14T21:59:04.686936-05:00", "temperatureC": 49, "temperatureF": 120, "summary": "Freezing"}, {"date": "2020-09-15T21:59:04.6869443-05:00", "temperatureC": 29, "temperatureF": 84, "summary": "Bracing"}, {"date": "2020-09-16T21:59:04.6869453-05:00", "temperatureC": 26, "temperatureF": 78, "summary": "Chilly"}, {"date": "2020-09-17T21:59:04.6869457-05:00", "temperatureC": 42, "temperatureF": 107, "summary": "Bracing"}]
```



The Postman application interface shows a `POST` request being made to the URL `https://localhost:44306/api/players`. The `Body` tab is selected, showing the raw JSON payload:

```
[{"name": "John Doe", "instrument": "Guitar"}, {"name": "Jane Smith", "instrument": "Drums"}, {"name": "Bob Johnson", "instrument": "Bass"}, {"name": "Alice Williams", "instrument": "Vocals"}, {"name": "Mike Brown", "instrument": "Keyboard"}]
```

Below the body, the `Params`, `Authorization`, `Headers`, `Tests`, and `Settings` tabs are visible. The `Body` tab has a green dot icon indicating it is active.

POST https://localhost:44306/api/players

Params Authorization Headers (10) **Body** Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2     "nickName": "Vyor",
3     "playerInstruments" :[
4         {
5             "InstrumentTypeId": 1,
6             "modelName": "Taylor 900 Series",
7             "Level": "Professional"
8         },
9         {
10            "InstrumentTypeId": 2,
11            "modelName": "Gibson Les Paul Classic",
12            "Level": "Intermediate"
13        },
14        {
15            "InstrumentTypeId": 3,
16            "modelName": "Pearl EXL705 Export",
17            "Level": "Novice"
18        }
19    ]
20 }
```

Body Cookies Headers (5) Test Results

Pretty Raw Preview Visualize JSON

```
1 "Record has been added successfully."
```

Body Cookies Headers (5) Test Results Status: 400 Bad Request Time: 536 ms

Pretty Raw Preview Visualize JSON

```
1 {
2     "type": "https://tools.ietf.org/html/rfc7231#section-6.5.1",
3     "title": "One or more validation errors occurred.",
4     "status": 400,
5     "traceId": "00-6a4c05a2c78c79479a4fde1b77e70eef-4fd2ad84765b7a41-00",
6     "errors": [
7         "PlayerInstruments": [
8             "The PlayerInstruments field is required."
9         ]
10    ]
11 }
```

Body Cookies Headers (5) Test Results

Status: 200 OK Time: 2.43 s Size: 477 B

Pretty Raw Preview Visualize JSON ↻

```
1 {
2     "currentPageNumber": 1,
3     "pageCount": 2,
4     "pageSize": 20,
5     "totalRecordCount": 3,
6     "result": [
7         {
8             "playerId": 1,
9             "nickName": "Vyor",
10            "joinedDate": "2020-09-14T03:21:01.9108968",
11            "instrumentSubmittedCount": 3
12        },
13        {
14            "playerId": 2,
15            "nickName": "Vianne",
16            "joinedDate": "2020-09-14T19:42:54.0784369",
17            "instrumentSubmittedCount": 1
18        }
19    ]
20 }
```

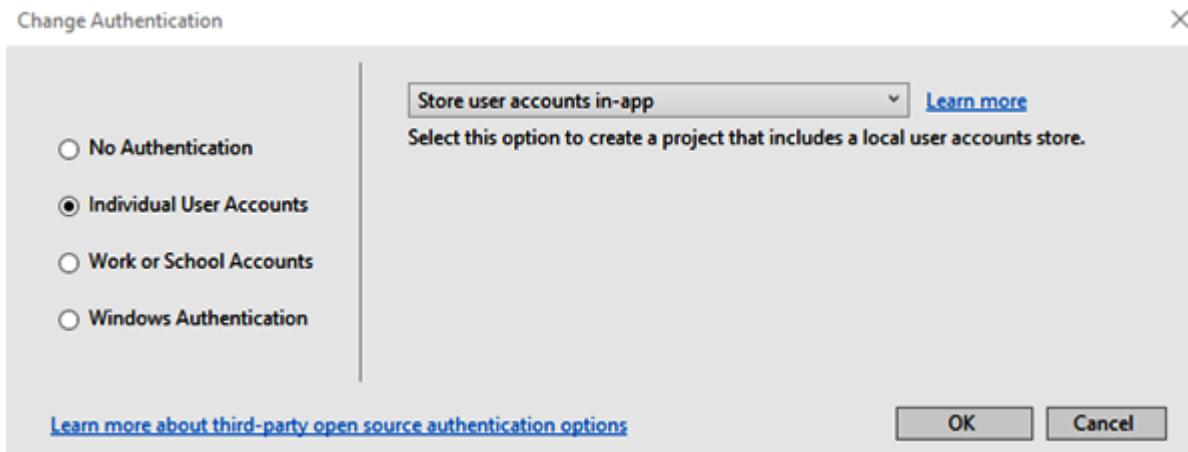
Body Cookies Headers (5) Test Results

Status: 200 OK Time: 2.64 s Size: 539 B

Pretty Raw Preview Visualize JSON ↻

```
1 {
2     "nickName": "Vyor",
3     "joinedDate": "2020-09-14T03:21:01.9108968",
4     "playerInstruments": [
5         {
6             "instrumentTypeName": "Acoustic Guitar",
7             "modelName": "Taylor 900 Series",
8             "level": "Professional"
9         },
10        {
11            "instrumentTypeName": "Electric Guitar",
12            "modelName": "Gibson Les Paul Classic",
13            "level": "Intermediate"
14        },
15        {
16            "instrumentTypeName": "Drums",
17            "modelName": "Pearl EXL705 Export",
18            "level": "Novice"
19        }
20    ]
21 }
```

Chapter 8: Working with Identity in ASP.NET



Register

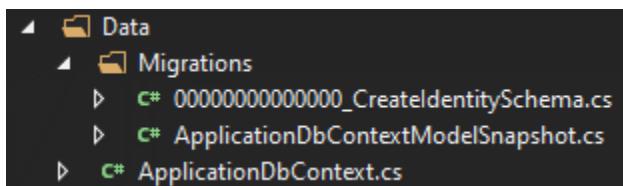
Create a new account.

Email

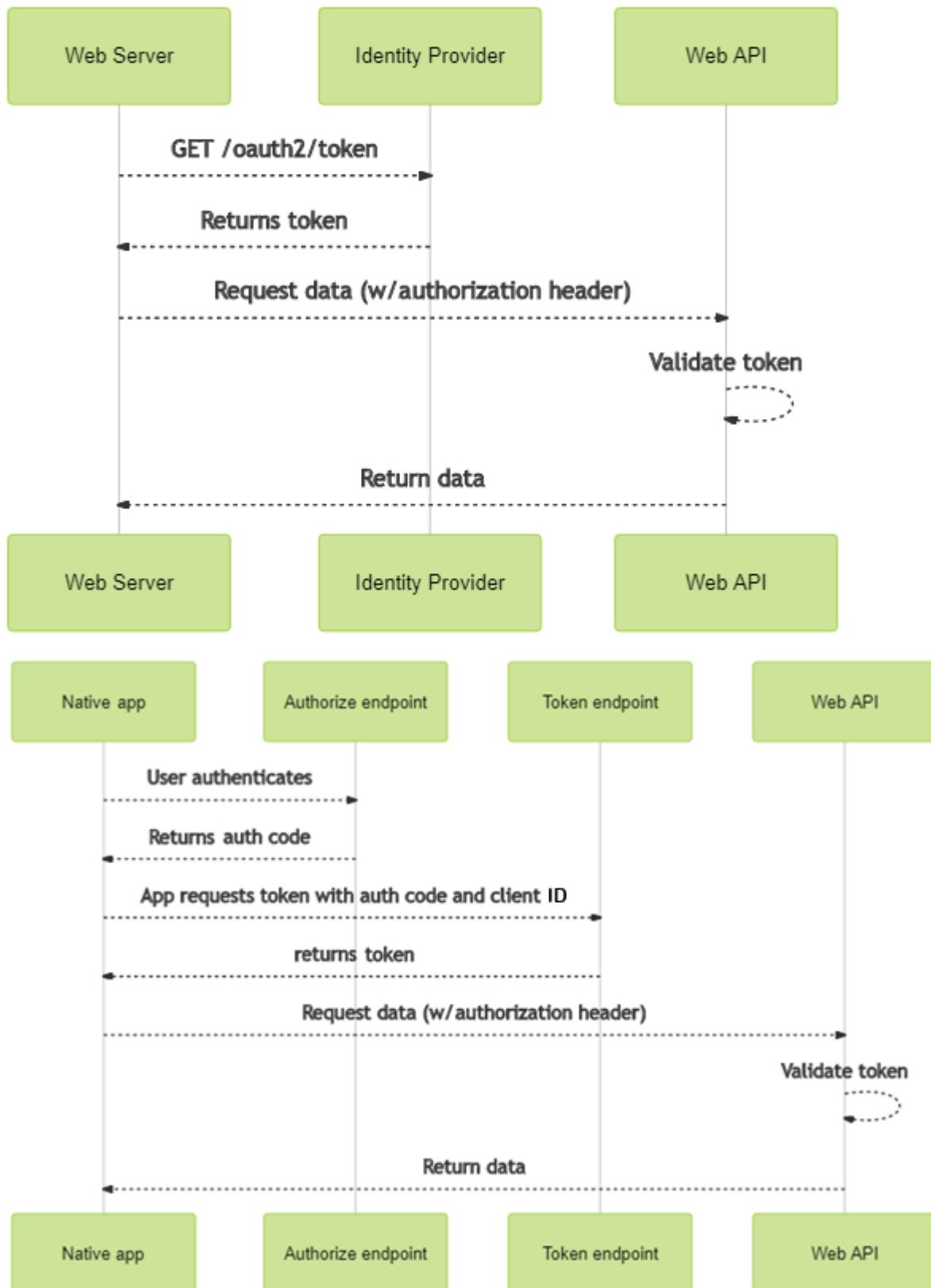
Password

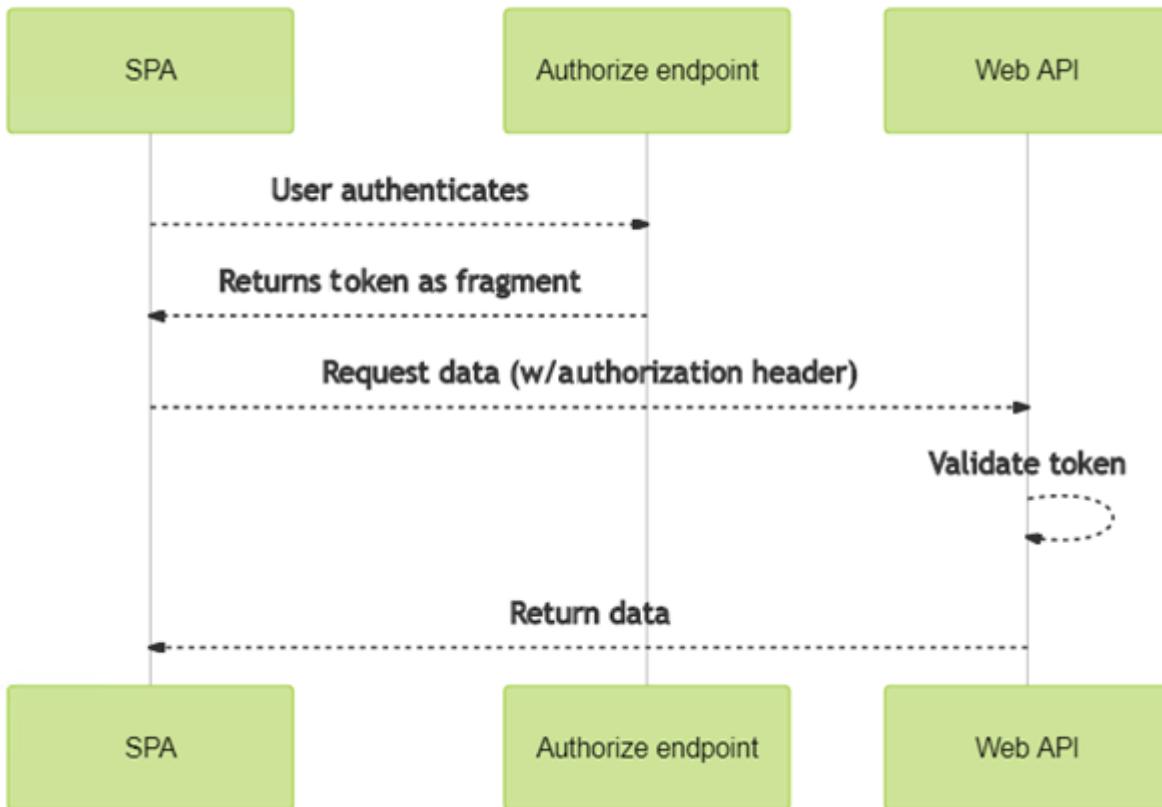
Confirm password

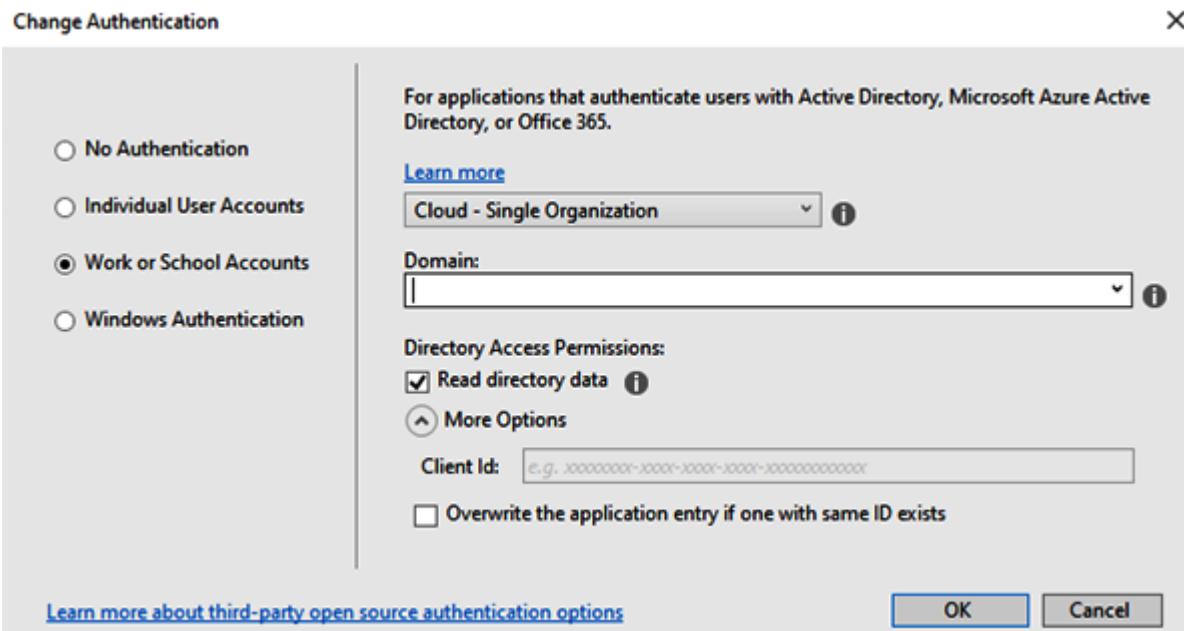
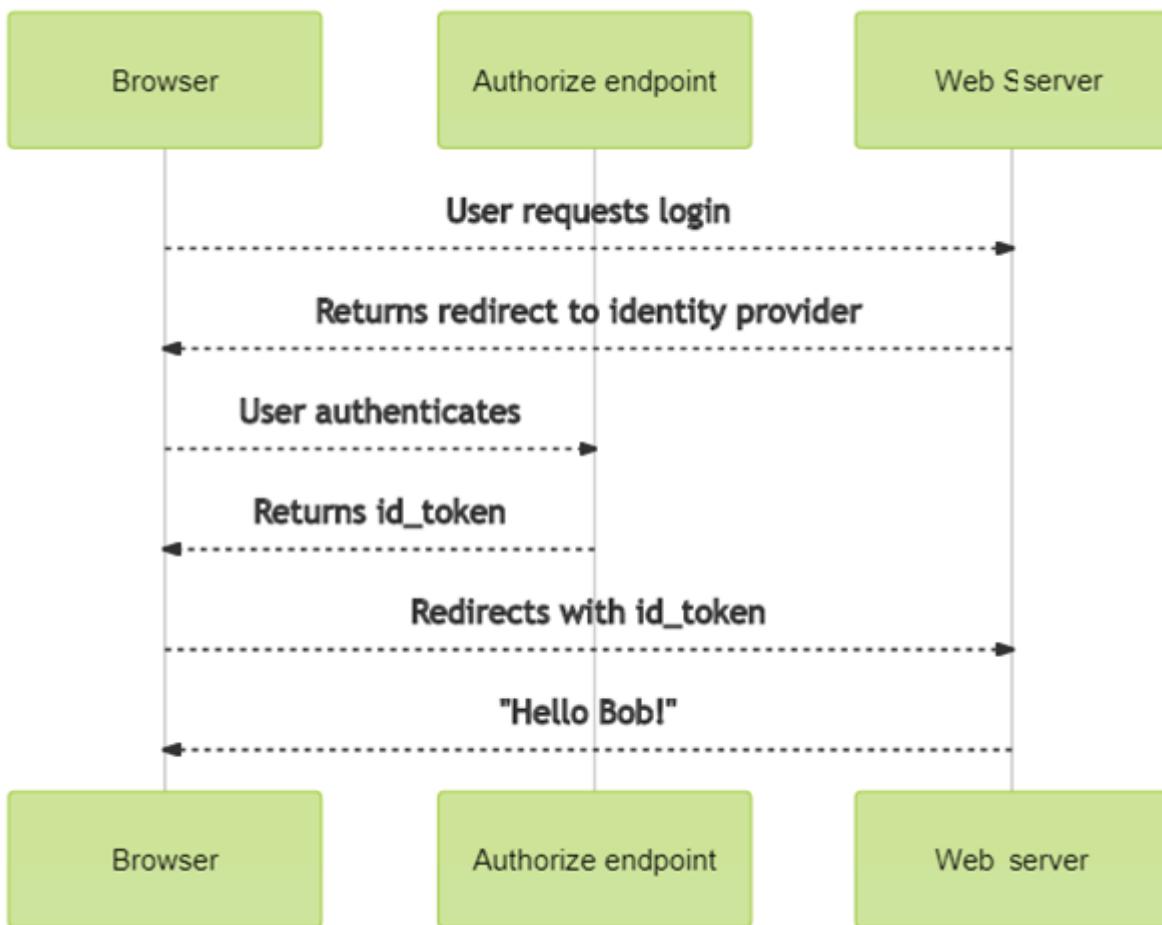
Register



```
c:\Code\Book\Chapter_07_BearerAuthClient>dotnet run
Token: eyJhbGciOiJSUzI1NiIsImtpZCI6IkRFQUYyQjhBNDg2NEM1
0b3NvLmNvbSIsIm5iZiI6MTU5NjEwNjc2NCwiZXhwIjoxNTk2MTEwMz
RiKogGtX1MH0zd0YddxV12hW0cCTHmLpuX0sL0sn16NJ0CFHGEzMqIX
jA30P6AOhbkVbps5bdjkSeqAyuaZQXQK3LveY8qz1I03UGzC-sKXrl0
```









Sign in

Email, phone, or Skype

[Can't access your account?](#)

[Sign-in options](#)

Next



andreas@

Permissions requested

Chapter_07_AADAuth

This application is not published by Microsoft.

This app would like to:

- View your basic profile
- Maintain access to data you have given it access to
- Consent on behalf of your organization

Accepting these permissions means that you allow this app to use your data as specified in their terms of service and privacy statement. You can change these permissions at <https://myapps.microsoft.com>. [Show details](#)

Does this app look suspicious? [Report it here](#)

Cancel

Accept

Request API permissions

Select an API

[Microsoft APIs](#)

[APIs my organization uses](#)

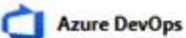
[My APIs](#)

Commonly used Microsoft APIs



Microsoft Graph

Take advantage of the tremendous amount of data in Office 365, Enterprise Mobility + Security, and Windows 10. Access Azure AD, Excel, Intune, Outlook/Exchange, OneDrive, OneNote, SharePoint, Planner, and more through a single endpoint.



Azure DevOps

Integrate with Azure DevOps and Azure DevOps server



Azure Rights Management Services

Allow validated users to read and write protected content



Azure Service Management

Programmatic access to much of the functionality available through the Azure portal

Calendar

Subject

Start

.NET Conf 2020

2020-09-10T06:00:00.0000000

 Facebook

 GitHub (Preview)

 Google

 LinkedIn

 Local account

 Microsoft Account

Change Authentication

X

- No Authentication
- Individual User Accounts
- Work or School Accounts
- Windows Authentication

Connect to an existing user store in the cloud [Learn more](#)

Select this option to connect to an existing Azure AD B2C application.

Domain Name

Application ID

Callback Path

/signin-oidc

Reply URI: <https://localhost:44398/signin-oidc> [Copy](#)

Sign-up or Sign-in Policy

Reset Password Policy

Edit Profile Policy

 (optional)

[Learn more about third-party open source authentication options](#)

OK

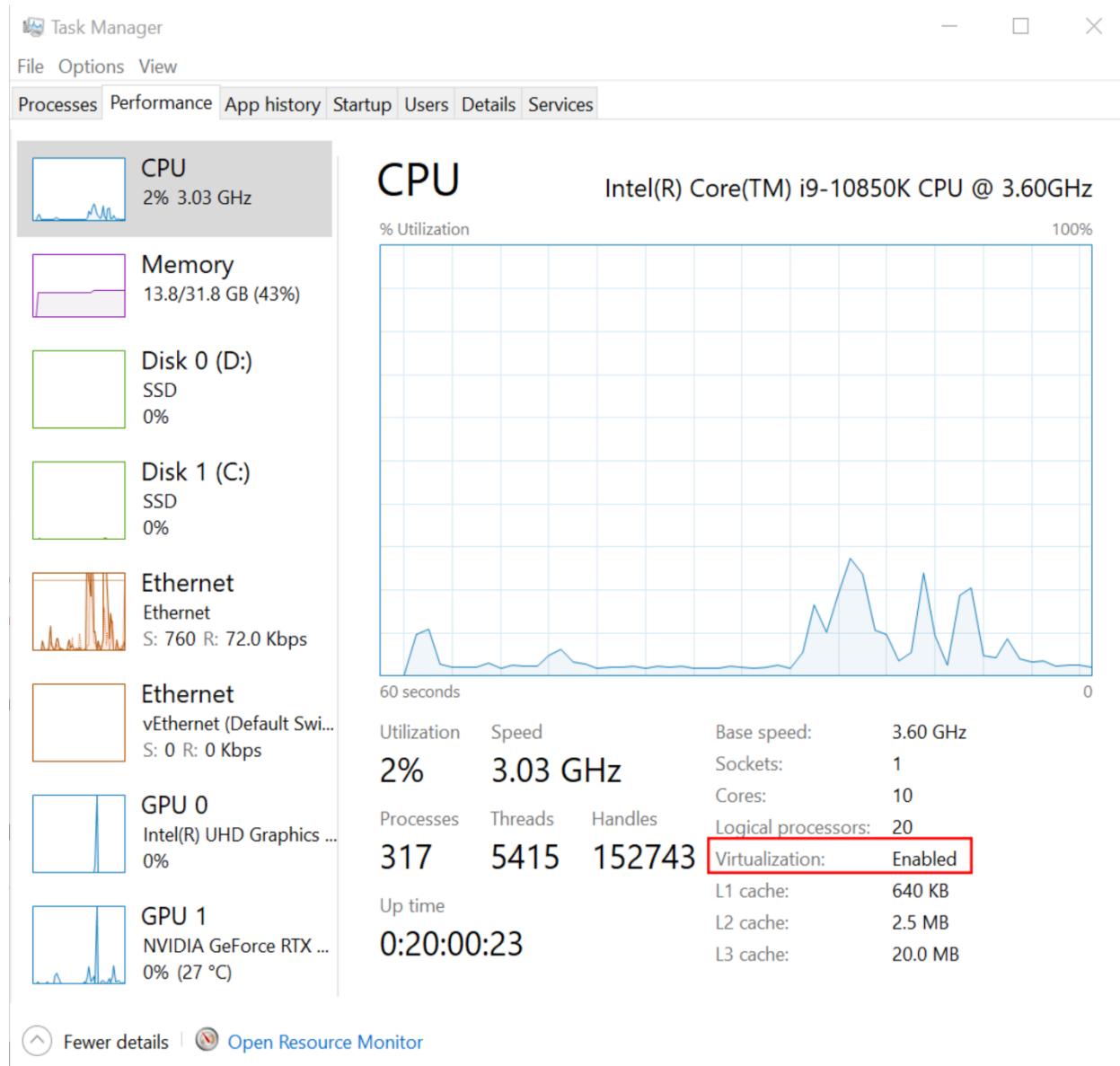
Cancel

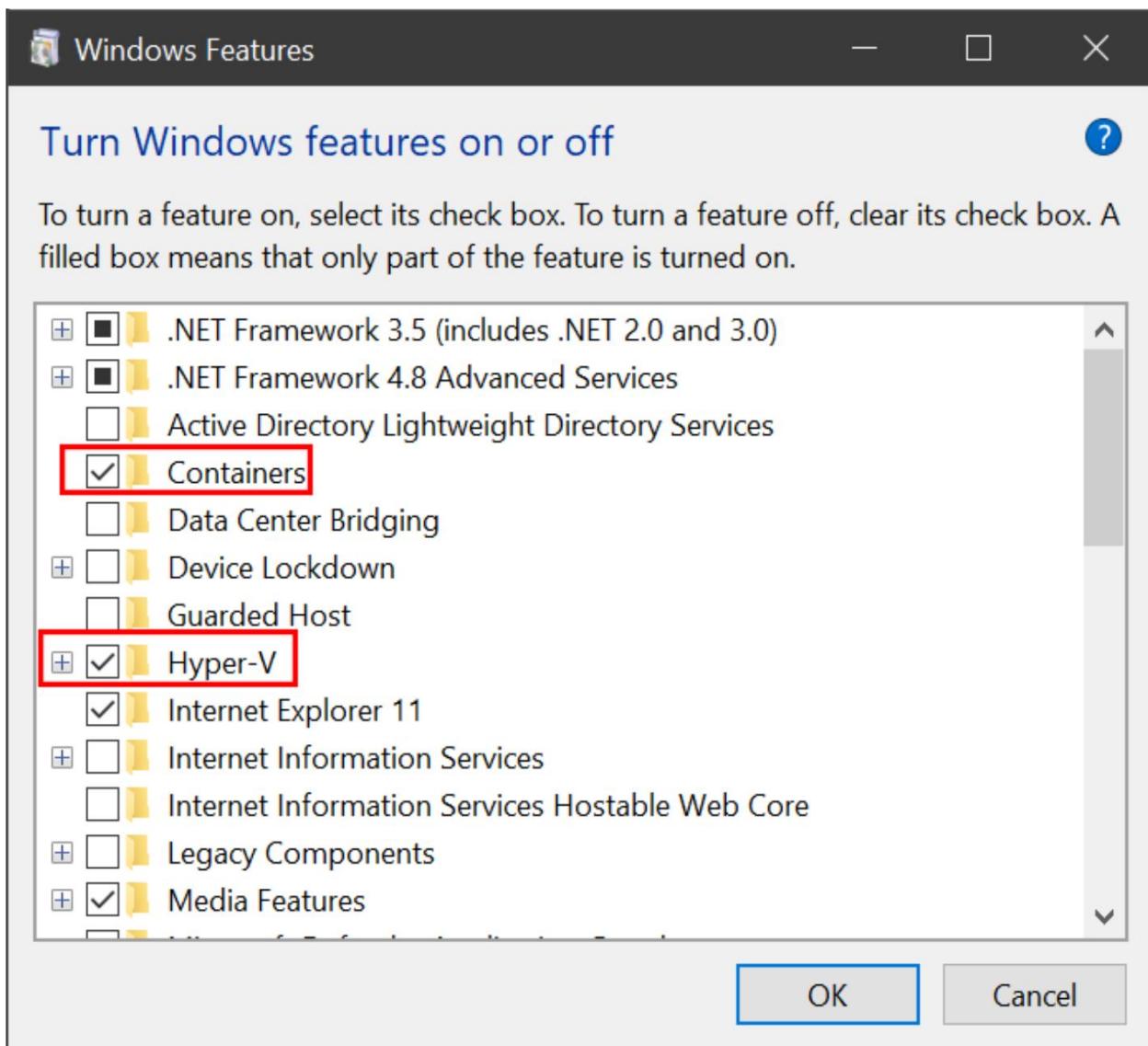
Chapter 9: Getting Started with Containers

```
C:\Users\andreas>dotnet --info
.NET SDK (reflecting any global.json):
  Version:  5.0.100-preview.5.20279.10
  Commit:   8139f1b74e

Runtime Environment:
  OS Name:     Windows
  OS Version:  10.0.20150
  OS Platform: Windows
  RID:         win10-x64
  Base Path:   C:\Program Files\dotnet\sdk\5.0.100-preview.5.20279.10\

Host (useful for support):
  Version: 5.0.0-preview.5.20278.1
  Commit:  4ae4e2fe08
```







Windows Features



Turn Windows features on or off



To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

- SMB Direct
- Telnet Client
- TFTP Client
- Virtual Machine Platform
- Windows Hypervisor Platform
- Windows Identity Foundation 3.5
- Windows PowerShell 2.0
- Windows Process Activation Service
- Windows Projected File System
- Windows Sandbox
- Windows Subsystem for Linux
- Windows TIFF IFilter
- Work Folders Client

OK

Cancel



Docker Desktop - Install WSL 2 kernel update



WSL 2 installation is incomplete.

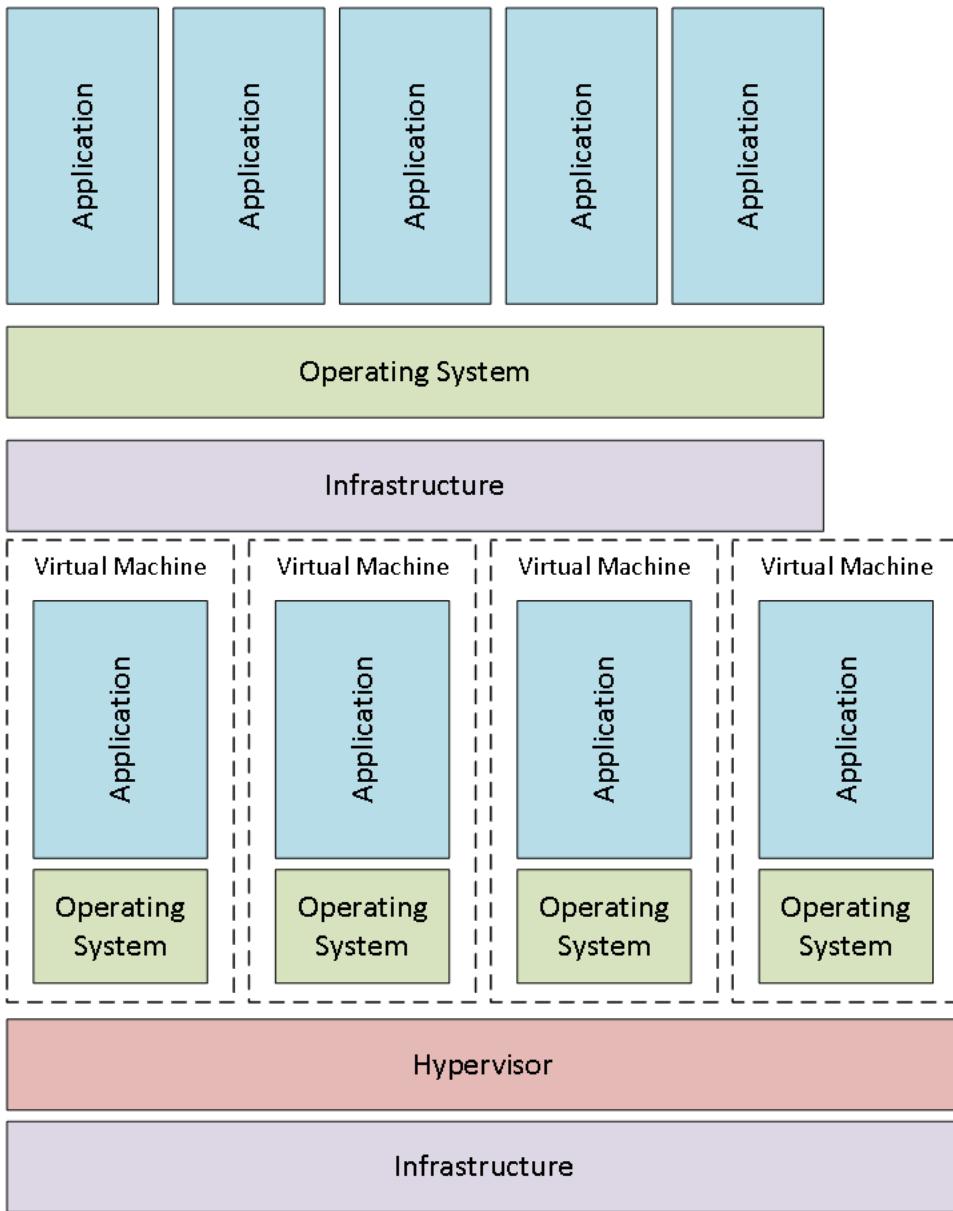


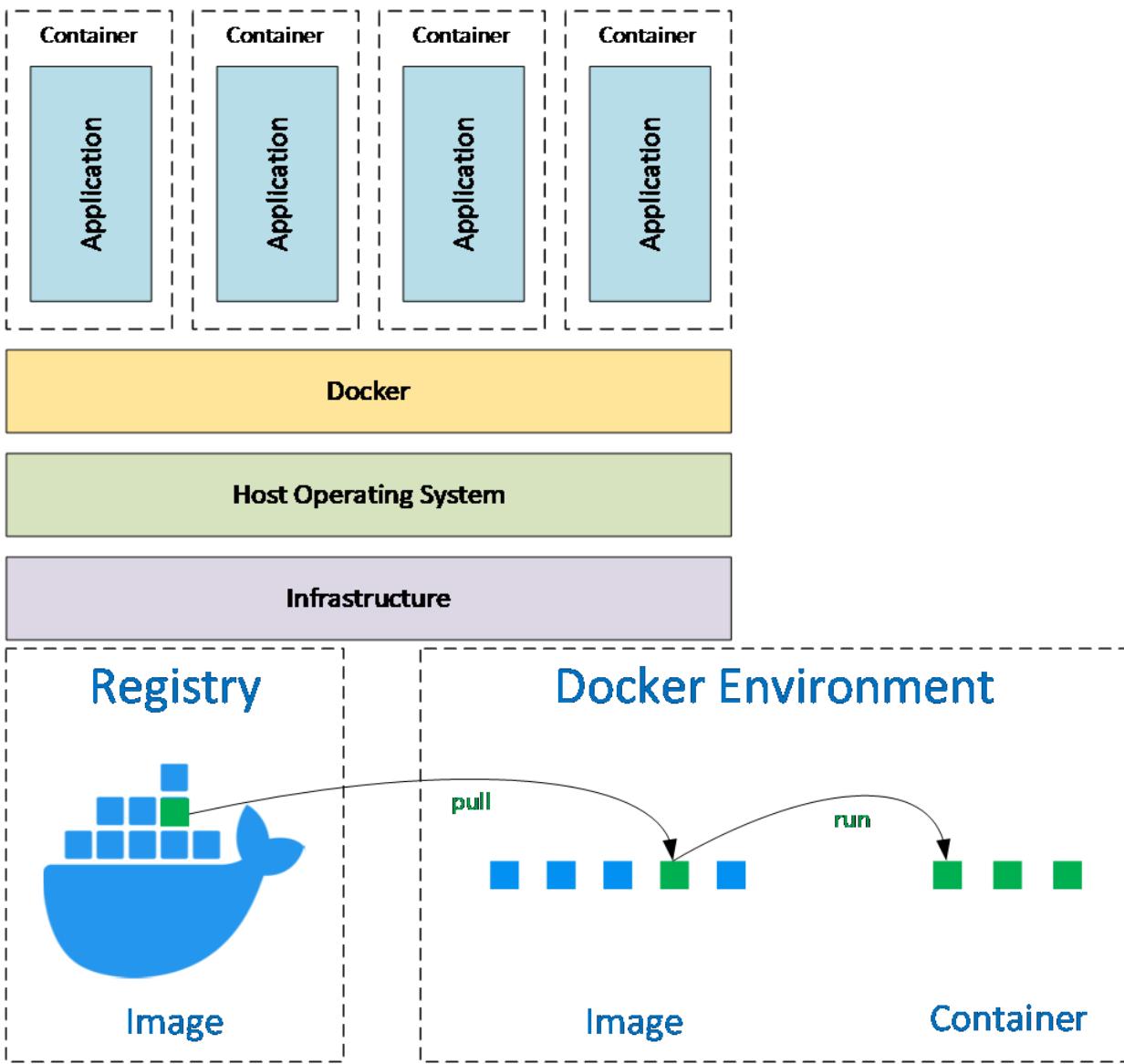
The WSL 2 Linux kernel is now installed using a separate MSI update package.
Please click the link and follow the instructions to install the kernel update:
<https://aka.ms/wsl2kernel>.

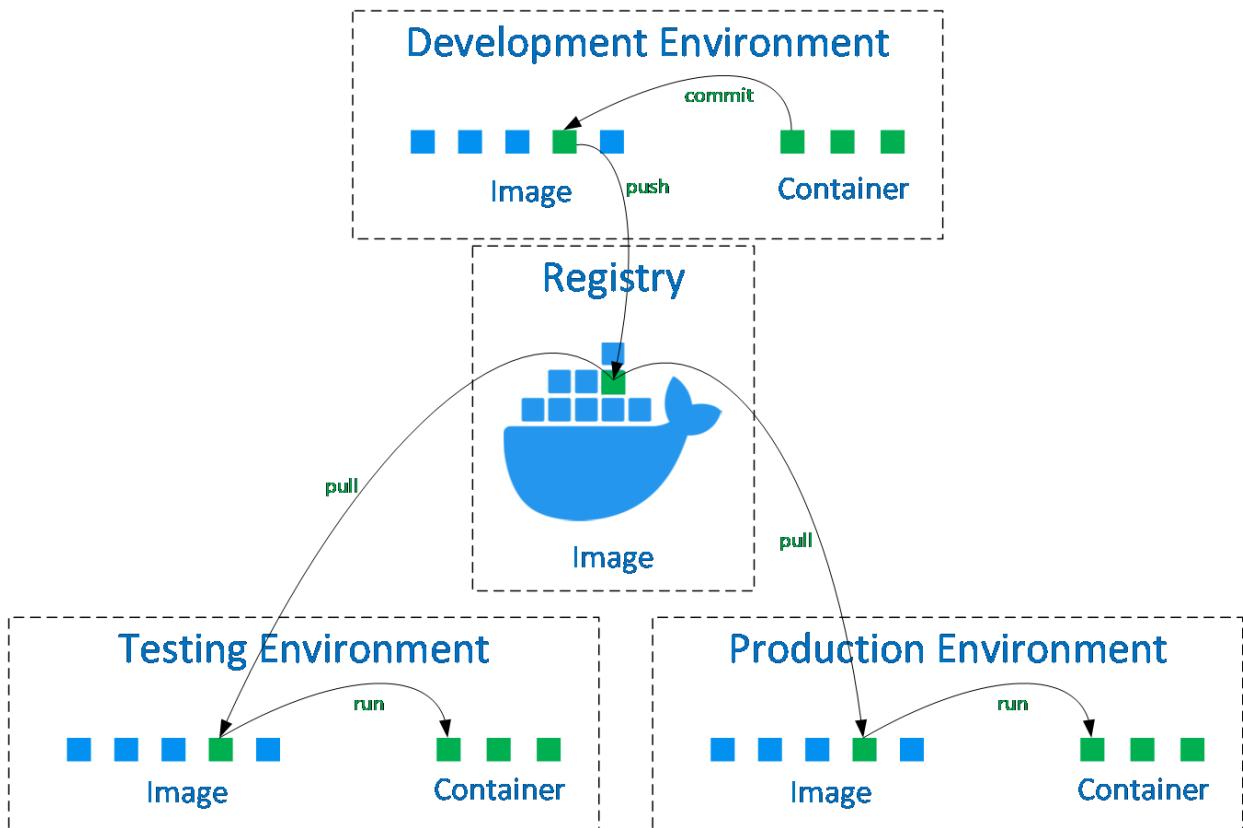
Press Restart after installing the Linux kernel.

Restart

Cancel







```

Client: Docker Engine - Community
  Azure integration 0.1.15
  Version:          19.03.12
  API version:      1.40
  Go version:       go1.13.10
  Git commit:       48a66213fe
  Built:            Mon Jun 22 15:43:18 2020
  OS/Arch:          windows/amd64
  Experimental:    false
  
```



```
Server: Docker Engine - Community
Engine:
  Version:          19.03.12
  API version:     1.40 (minimum version 1.12)
  Go version:       go1.13.10
  Git commit:      48a66213fe
  Built:           Mon Jun 22 15:49:27 2020
  OS/Arch:         linux/amd64
  Experimental:   false
containerd:
  Version:          v1.2.13
  GitCommit:        7ad184331fa3e55e52b890ea95e65ba581ae3429
runc:
  Version:          1.0.0-rc10
  GitCommit:        dc9208a3303feef5b3839f4323d9beb36df0a9dd
docker-init:
  Version:          0.18.0
  GitCommit:        fec3683
```

 Windows Security Alert

X



Windows Defender Firewall has blocked some features of this app

Windows Defender Firewall has blocked some features of com.docker.backend on all public and private networks.



Name: com.docker.backend
Publisher: Unknown
Path: C:\program files\docker\docker\resources\com.docker.backend.exe

Allow com.docker.backend to communicate on these networks:

Private networks, such as my home or work network

Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)

[What are the risks of allowing an app through a firewall?](#)

 Allow access

Cancel

```

PS C:\Users\jeff> docker run --name myRedis -p 6379:6379 -d redis
Unable to find image 'redis:latest' locally
latest: Pulling from library/redis
d121f8d1c412: Pull complete
2f9874741855: Pull complete
d92da09ebfd4: Pull complete
bdfa64b72752: Pull complete
e748e6f663b9: Pull complete
eb1c8b66e2a1: Pull complete
Digest: sha256:1cfb205a988a9dae5f025c57b92e9643ec0e7ccff6e66bc639d8a5f95bba928c
Status: Downloaded newer image for redis:latest
2d7c56673558afa850c88c98161327a303edcbf0675d928670383de71126a716

PS C:\Users\jeff> docker ps
CONTAINER ID        IMAGE       COMMAND                  CREATED             STATUS    PORTS          NAMES
2d7c56673558        redis        "docker-entrypoint.s..."   5 days ago         Up 22 seconds   0.0.0.0:6379->6379/tcp   myRedis

PS C:\Users\jeff> docker images
REPOSITORY          TAG           IMAGE ID            CREATED             SIZE
redis               latest        84c5f6e03bf0      12 days ago        104MB
hello-world         latest        bf756fb1ae65      8 months ago       13.3kB

PS C:\Users\jeff> docker exec -it myRedis sh
# redis-cli
127.0.0.1:6379> hset messageFromRedis "absexp" "-1" "sldexp" "-1" "data" "Hello from Redis!"
(integer) 3
127.0.0.1:6379> set key1 value1
OK
127.0.0.1:6379> get key1
"value1"
127.0.0.1:6379> quit

```

Templates	Short Name	Language	Tags
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
ASP.NET Core Web API	webapi	[C#], F#	Web/WebAPI
ASP.NET Core gRPC Service	grpc	[C#]	Web/gRPC

```

PS C:\Users\jeff> -

```

```
PS C:\dev> mkdir Chap9
```

Directory: C:\dev

Mode	LastWriteTime	Length	Name
----	-----	-----	-----
d----	1/10/2020 12:03 PM		Chap9

```
PS C:\dev> cd Chap9
```

```
PS C:\dev\Chap9> dotnet new sln
```

The template "Solution File" was created successfully.

```
PS C:\dev\Chap9> mkdir web
```

```
Directory: C:\dev\Chap9
```

Mode	LastWriteTime	Length	Name
d-----	1/10/2020 12:04 PM		web

```
PS C:\dev\Chap9> cd web
```

```
PS C:\dev\Chap9\web> dotnet new web
```

```
The template "ASP.NET Core Empty" was created successfully.
```

```
Processing post-creation actions...
```

```
Running 'dotnet restore' on C:\dev\Chap9\web\web.csproj...
```

```
  Determining projects to restore...
```

```
  Restored C:\dev\Chap9\web\web.csproj (in 92 ms).
```

```
Restore succeeded.
```

```
PS C:\dev\Chap9\web> cd ..
```

```
PS C:\dev\Chap9> dotnet sln add web/web.csproj
```

```
Project `web\web.csproj` added to the solution.
```

```
PS C:\dev\Chap9> dotnet run --project web
```

```
info: Microsoft.Hosting.Lifetime[0]
```

```
  Now listening on: https://localhost:5001
```

```
info: Microsoft.Hosting.Lifetime[0]
```

```
  Now listening on: http://localhost:5000
```

```
info: Microsoft.Hosting.Lifetime[0]
```

```
  Application started. Press Ctrl+C to shut down.
```

```
info: Microsoft.Hosting.Lifetime[0]
```

```
  Hosting environment: Development
```

```
info: Microsoft.Hosting.Lifetime[0]
```

```
  Content root path: C:\dev\Chap9\web
```

The screenshot shows a web browser window at localhost:5000 displaying "Hello World!" and a code editor with two files:

web - Notepad

```
<Project Sdk="Microsoft.NET.Sdk.Web">

<PropertyGroup>
    <TargetFramework>netcoreapp3.1</TargetFramework>
</PropertyGroup>

<ItemGroup>
    <PackageReference Include="Microsoft.Extensions.Caching.StackExchangeRedis" Version="3.1.8" />
</ItemGroup>

</Project>
```

Startup.cs - Notepad

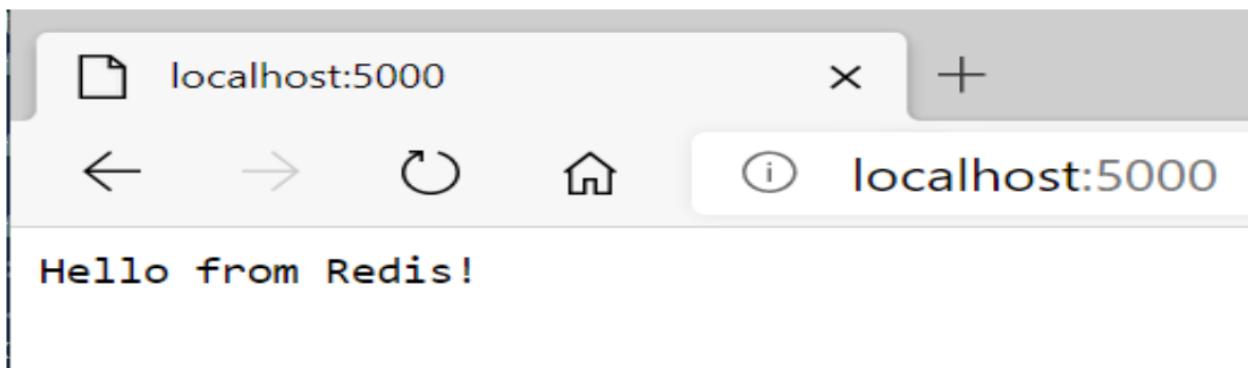
```
File Edit Format View Help
using Microsoft.AspNetCore.Builder;
using Microsoft.AspNetCore.Hosting;
using Microsoft.AspNetCore.Http;
using Microsoft.Extensions.Caching.Distributed;
using Microsoft.Extensions.DependencyInjection;
using Microsoft.Extensions.Hosting;

namespace web
{
    public class Startup
    {
        public void ConfigureServices(IServiceCollection services)
        {
            services.AddStackExchangeRedisCache(option => option.Configuration = "172.23.160.1");
        }

        public void Configure(IApplicationBuilder app, IWebHostEnvironment env, IDistributedCache cache)
        {
            if (env.IsDevelopment())
            {
                app.UseDeveloperExceptionPage();
            }

            app.UseRouting();

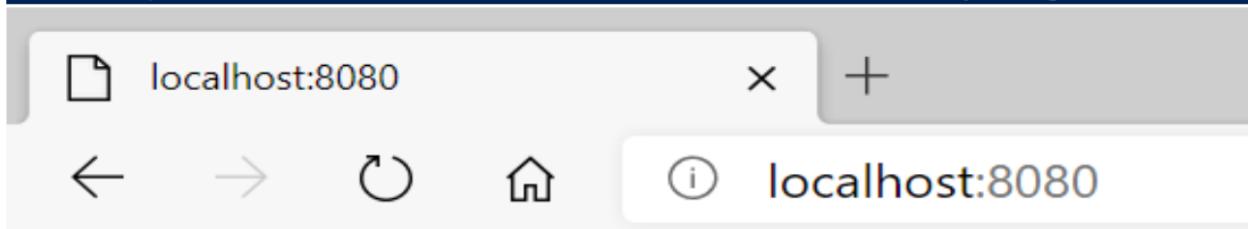
            app.UseEndpoints(endpoints =>
            {
                endpoints.MapGet("/", async context =>
                {
                    await context.Response.WriteAsync(cache.GetString("messageFromRedis"));
                });
            });
        }
    }
}
```



```
PS C:\dev\Chap9\web> dotnet publish -c Release
Microsoft (R) Build Engine version 16.7.0+7fb82e5b2 for .NET
Copyright (C) Microsoft Corporation. All rights reserved.
```

```
Determining projects to restore...
All projects are up-to-date for restore.
web -> C:\dev\Chap9\web\bin\Release\netcoreapp3.1\web.dll
web -> C:\dev\Chap9\web\bin\Release\netcoreapp3.1\publish\
PS C:\dev\Chap9\web> cd bin\release\netcoreapp3.1
PS C:\dev\Chap9\web\bin\release\netcoreapp3.1> ■
```

```
PS C:\Users\jeff\web1\bin\release\netcoreapp3.1> docker images
REPOSITORY          TAG      IMAGE ID   CREATED        SIZE
myweb               latest   1ec5f8145b46  8 days ago   211MB
web                 dev     79a7a5d8c9a4  8 days ago   207MB
redis               latest   84c5f6e03bf0  2 weeks ago  104MB
mcr.microsoft.com/dotnet/core/sdk    3.1-buster   c4155a9104a8  2 weeks ago  708MB
mcr.microsoft.com/dotnet/core/aspnet  3.1-buster-slim 28de0d96c539  2 weeks ago  207MB
hello-world         latest   bf756fb1ae65  8 months ago  13.3kB
microsoft/aspnetcore      latest   db030c19e94b  2 years ago  347MB
```



Hello from Redis!

```
1 #See https://aka.ms/
2
3 FROM mcr.microsoft.com/dotnet/core/sdk:3.1 AS build
4 WORKDIR /app
5 EXPOSE 80
6 EXPOSE 443
7
8 FROM mcr.microsoft.com/dotnet/core/aspnet:3.1 AS final
9 WORKDIR /app
10 COPY ["web.csproj", "]
11 RUN dotnet restore "
12 COPY . .
13 WORKDIR "/src/."
14 RUN dotnet build "web.csproj" --no-restore
15
16 FROM build AS publish
17 RUN dotnet publish "web.csproj" --output /app
18
19 FROM base AS final
20 WORKDIR /app
21 COPY --from=publish /app
22 ENTRYPOINT ["dotnet", "web.dll"]
```

Docker File Options

X

Target OS:

Linux

Windows

OK

Cancel

Solution Explorer

The Solution Explorer window displays the following structure:

- Solution 'web' (1 of 1 project)
 - web
 - Connected Services
 - Dependencies
 - Properties
 - appsettings.json
 - Dockerfile
 - Program.cs
 - Startup.cs

The Dockerfile is currently selected, highlighted with a blue background.

Test Explorer Solution Expl... Team Explorer Containers

► Docker ▾

Containers

Containers		Images		Environment				Ports		Logs		Files	
Other Containers				Name Value									
keen_volhard				ASPNETCORE_ENVIRONMENT	Development								
myRedis				ASPNETCORE_LOGGING_CONSOLE_DISA...	true								
web				ASPNETCORE_URLS	https://+:443;http://+:80								
				DOTNET_RUNNING_IN_CONTAINER	true								
				DOTNET_USE_POLLING_FILE_WATCHER	1								
				NUGET_FALLBACK_PACKAGES	/root/.nuget/fallbackpackages								
				NUGET_PACKAGES	/root/.nuget/fallbackpackages								
				PATH	/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/bin								

Containers		Images		Environment				Ports		Logs		Files	
Other Containers				Container Port Host Port Port Type									
keen_volhard				6379	6379	TCP							
myRedis													
web													

Containers

Test Explorer Solution Explorer Team Explorer Containers

```

32
33     app.UseEndpoints(endpoints =>
34     {
35         endpoints.MapGet("/", async context =>
36         {
37             await context.Response.WriteAsync(cache.GetString("messageFromRedis"));
38         });
39     });
40 }
41
42
43
    
```

cache | Microsoft.Extensions.Caching.StackExchangeRedis.RedisCache

- Static members
- Non-Public members

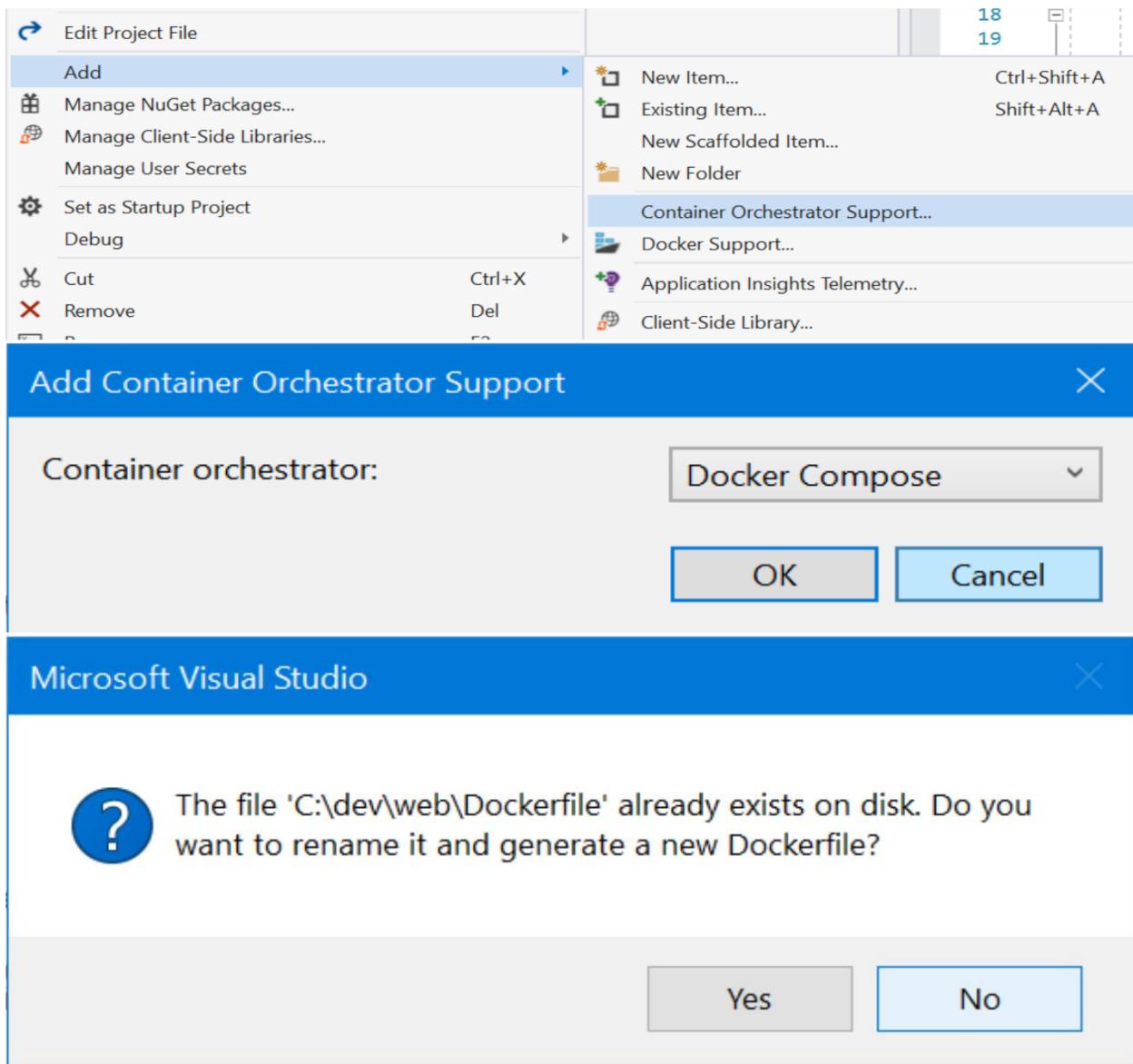
- _cache
- _connection
- connectionLock
- _instance
- _options

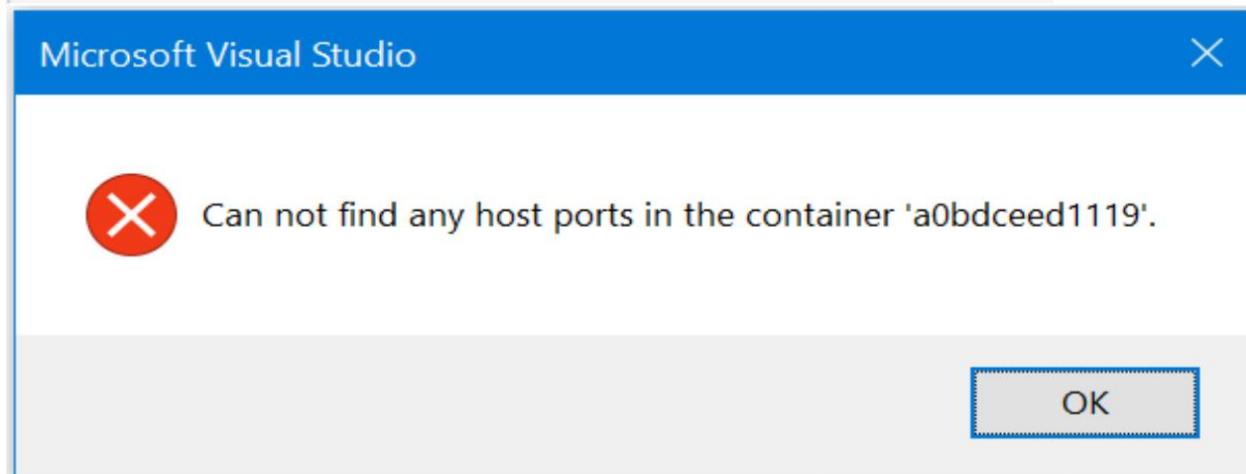
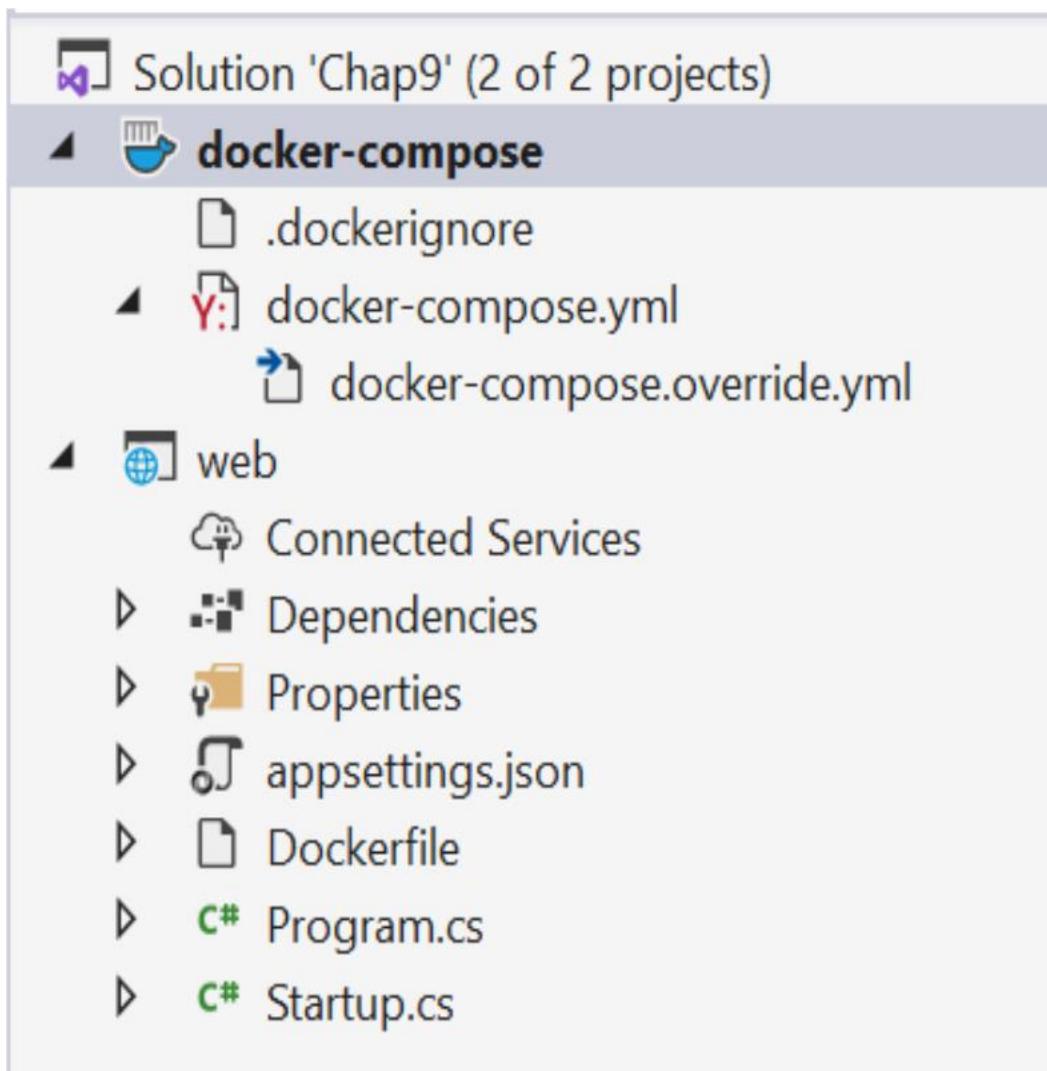
The runtime is unable to evaluate this expression.
The runtime is unable to evaluate this expression.
Current Count = 1

(Microsoft.Extensions.Caching.StackExchangeRedis.RedisCacheOptions)

- Configuration
- ConfigurationOptions
- InstanceName
- Non-Public members

Q ▾ "172.23.160.1" ↗ null null





The screenshot shows a browser window with two tabs: "localhost:32784" and "localhost:32787". The "localhost:32787" tab displays the text "Hello from Redis running in an isolated network!". Below the browser is a PowerShell window (PS C:\Users\jeff>) showing the output of the command "docker network ls".

```
PS C:\Users\jeff> docker network ls
NETWORK ID      NAME      DRIVER      SCOPE
b6318631dc3e   bridge    bridge      local
50546522fe41   dockercompose11823690501171496634_chap9   bridge      local
94d2cf293ace   host      host       local
e0d28e471a97   none     null       local
PS C:\Users\jeff>
```

Below the PowerShell window is a JSON object representing containers and their network settings:

```
{"Containers": { "2e96341c3352194ecf128c5e567dd967ee5d0e746e878d8c38f7a0ba0773a366": { "Name": "hopeful_snyder", "EndpointID": "ddd2261eee0d06737e981840d1133d6648b3ff68a444b2dd9a664f566a139fd1", "MacAddress": "02:42:ac:11:00:04", "IPv4Address": "172.17.0.4/16", "IPv6Address": "" }, "478208fd987b6367f201144f538f6db575861e641c5a2e08ef0fa2c912a75dfe": { "Name": "myRedis", "EndpointID": "323c645b202eb0d561a799431e7e80a14f5fe748a7045767a85b7be5fe1244e2", "MacAddress": "02:42:ac:11:00:03", "IPv4Address": "172.17.0.3/16", "IPv6Address": "" }, "9f97c8ec6319cf7b64f6ca675d2ff9bb1754e83744f29bcf023486f4393820e2": { "Name": "web", "EndpointID": "a94527314a3356bef2cba762bafaea8a07cc264382a8bd1989de54c7d8abc49d", "MacAddress": "02:42:ac:11:00:02", "IPv4Address": "172.17.0.2/16", "IPv6Address": "" } }}
```

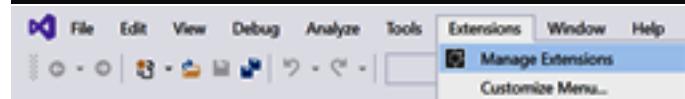
```
"Options": {
    "com.docker.network.bridge.default_bridge": "true",
    "com.docker.network.bridge.enable_icc": "true",
    "com.docker.network.bridge.enable_ip_masquerade": "true",
    "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
    "com.docker.network.bridge.name": "docker0",
    "com.docker.network.driver.mtu": "1500"
},
"Labels": {
    "com.docker.compose.network": "chap9",
    "com.docker.compose.project": "dockercustomcompose11823690501171496634",
    "com.docker.compose.version": "1.27.4"
}
"Containers": {
    "457d13f60cc337cba85b1e8050aff2b3d8f02d7bdf382a8c57b125e619d62d5f": {
        "Name": "web_1",
        "EndpointID": "8427e507641c0404bc88631f814b232a3803f5d0d60c762a8944580d94a16eb9",
        "MacAddress": "02:42:ac:14:00:03",
        "IPv4Address": "172.20.0.3/16",
        "IPv6Address": ""
    },
    "93660ae53a3426edbe63c0c9bc9f5266cdc00eb53d216e91573f6948a4b121b3": {
        "Name": "dockercustomcompose11823690501171496634_redis_1",
        "EndpointID": "e9f2fe5b29ea95835c206ea50b6cf45549f32e352796d6e8e31e28da3cb4d7bf",
        "MacAddress": "02:42:ac:14:00:02",
        "IPv4Address": "172.20.0.2/16",
        "IPv6Address": ""
    }
},
```

Chapter 10: Deploying to AWS and Azure

```
C:\Users\andreas>dotnet --info
.NET SDK (reflecting any global.json):
  Version:  5.0.100-preview.5.20279.10
  Commit:   8139f1b74e

Runtime Environment:
  OS Name:     Windows
  OS Version:  10.0.20150
  OS Platform: Windows
  RID:         win10-x64
  Base Path:   C:\Program Files\dotnet\sdk\5.0.100-preview.5.20279.10\

Host (useful for support):
  Version: 5.0.0-preview.5.20278.1
  Commit:  4ae4e2fe08
```



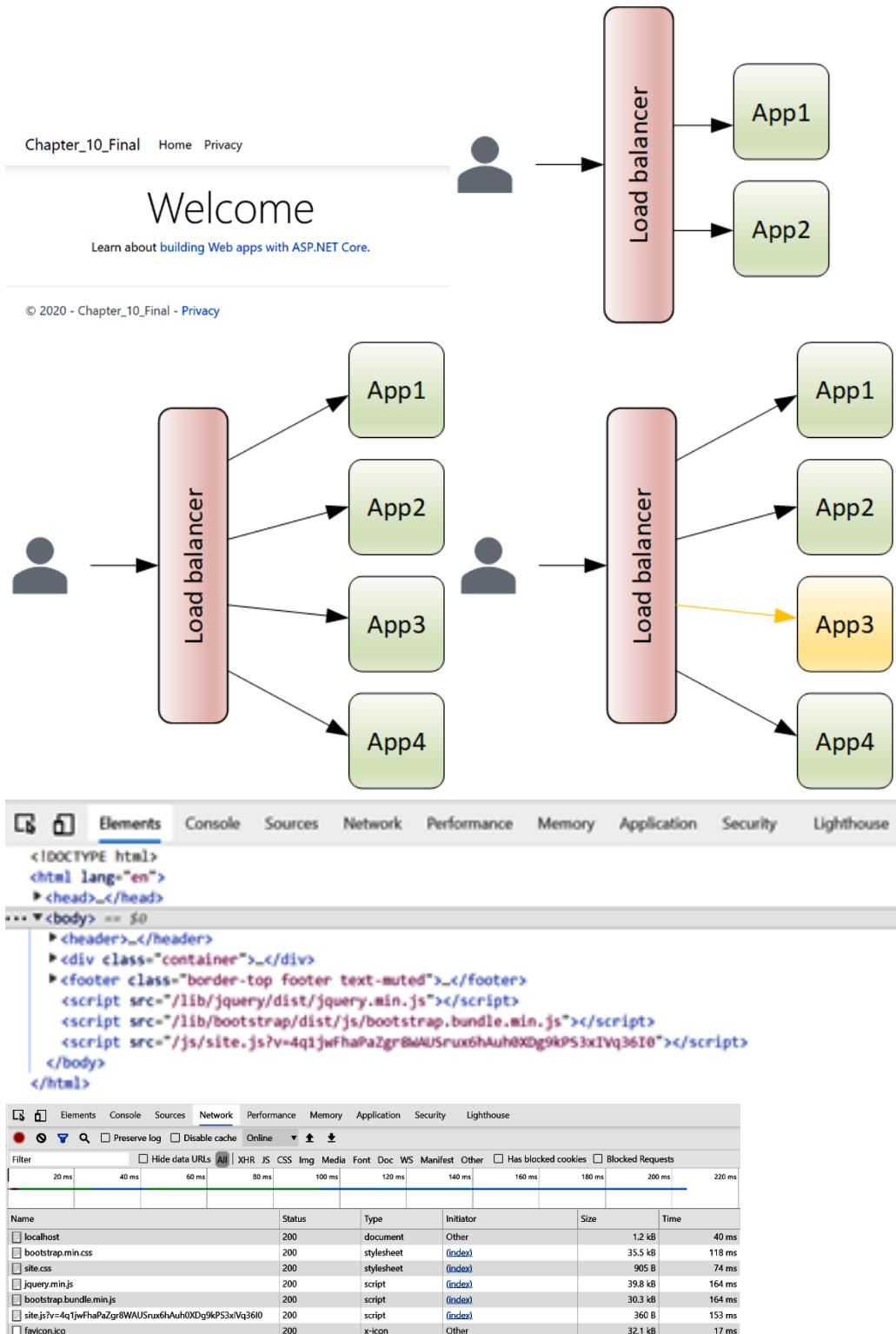
A screenshot of the Visual Studio Installer window. The 'Available' tab is selected. A red box highlights the 'Modify' button for Visual Studio Professional 2019. Below it, the AWS Toolkit for Visual Studio 2017 and 2019 extension is listed with its details and a 'More' button.

```
PS C:\Users\jeff\Source\Repos\ASP.NET-Core-5-For-Beginners\Chapter 10\Chapter 10 Final> dotnet new mvc
The template "ASP.NET Core Web App (Model-View-Controller)" was created successfully.
This template contains technologies from parties other than Microsoft, see https://aka.ms/aspnetcore-3.1-third-party-notices for details.

Processing post-creation actions...
Running 'dotnet restore' on C:\Users\jeff\Source\Repos\ASP.NET-Core-5-For-Beginners\Chapter 10\Chapter 10 Final\Chapter 10 Final.csproj...
Determining projects to restore...
Restored C:\Users\jeff\Source\Repos\ASP.NET-Core-5-For-Beginners\Chapter 10\Chapter 10 Final\Chapter 10 Final.csproj (in 109 ms).

Restore succeeded.

PS C:\Users\jeff\Source\Repos\ASP.NET-Core-5-For-Beginners\Chapter 10\Chapter 10 Final> dotnet run
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: https://localhost:5001
info: Microsoft.Hosting.Lifetime[0]
      Now listening on: http://localhost:5000
info: Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
      Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
      Content root path: E:\Users\jeff\Source\Repos\ASP.NET-Core-5-For-Beginners\Chapter 10\Chapter 10 Final
```



The screenshot shows a browser developer tools Network tab at the top, displaying a timeline of network requests. Below it is a Visual Studio code editor window.

Network Tab:

Name	Status	Type	Initiator	Size	Time
unknown	404	document	Other	79 B	30 ms
data:image/svg+xml;...	200	svg+xml	chrome-error://chromewebdat...	(memory cache)	0 ms
data:image/svg+xml;...	200	svg+xml	chrome-error://chromewebdat...	(memory cache)	0 ms
data:image/svg+xml;...	200	svg+xml	chrome-error://chromewebdat...	(memory cache)	0 ms
data:image/svg+xml;...	200	svg+xml	chrome-error://chromewebdat...	(memory cache)	0 ms

Code Editor (HealthCheck.cs):

```
1  namespace Chapter_10_Final
2  {
3      public class HealthCheck : IHealthCheck
4      {
5      }
6  }
```

IHealthCheck Implementation:

```
using Microsoft.Extensions.Diagnostics.HealthChecks;
Microsoft.Extensions.Diagnostics.HealthChecks.IHealthCheck
Generate type 'HealthCheck'
Change 'HealthCheck' to 'HealthCheck'.
```

CS0246 Error: CS0246 The type or namespace name 'IHealthCheck' could not be found (are you missing a using directive or an assembly reference?)

Preview changes:

```
using Microsoft.Extensions.Diagnostics.HealthChecks;
namespace Chapter_10_Final
```

IHealthCheck Implementation (continued):

```
CS0535 'HealthCheck' does not implement interface member 'IHealthCheck.CheckHealthAsync(HealthCheckContext, CancellationToken)'
```

```
using Microsoft.Extensions.Diagnostics.HealthChecks;
using System.Threading;
using System.Threading.Tasks;

...
{
    public Task<HealthCheckResult> CheckHealthAsync(HealthCheckContext context, CancellationToken cancellationToken = default)
    {
        throw new System.NotImplementedException();
    }
}
```

ConfigureServices Method:

```
public void ConfigureServices(IServiceCollection services)
{
    services.AddControllersWithViews();
    services.AddHealthChecks().AddCheck<HealthCheck>("web");
}
```

```

public void Configure(IApplicationBuilder app, IWebHostEnvironment env)
{
    if (env.IsDevelopment())
    {
        app.UseDeveloperExceptionPage();
    }
    else
    {
        app.UseExceptionHandler("/Home/Error");
        // The default HSTS value is 30 days. You may want to change this
        // for production scenarios, see https://aka.ms/aspnetcore-hsts.
        app.UseHsts();
    }
    app.UseHttpsRedirection();
    app.UseStaticFiles();

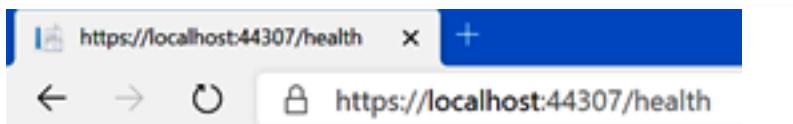
    app.UseRouting();

    app.UseAuthorization();

    app.UseEndpoints(endpoints =>
    {
        endpoints.MapHealthChecks("health");

        endpoints.MapControllerRoute(
            name: "default",
            pattern: "{controller=Home}/{action=Index}/{id?}");
    });
}

```



A screenshot of the Network tab in a browser's developer tools. The tab is titled "Network" and shows a list of network requests. The requests listed are:

Name	Status	Type	Initiator	Size	Time
health	200	document	Other	195 B	14 ms
favicon.ico	200	x-icon	Other	32.1 kB	17 ms
health	200	document	Other		172 B
favicon.ico	200	x-icon	Other	32.1 kB	16 ms
health	503	document	Other	48 B	23 ms
favicon.ico	200	x-icon	Other	32.1 kB	17 ms
health	200	document	Other		172 B
favicon.ico	200	x-icon	Other	32.1 kB	17 ms
health	200	document	Other		172 B
favicon.ico	200	x-icon	Other	32.1 kB	17 ms

The "Time" column shows the response time for each request. The "Status" column includes a red "503" for one of the "health" requests.

A screenshot of the AWS IAM service console. The search bar at the top contains the text "iam". Below the search bar, there is a table with columns for "Favorites" and "All services". Under "All services", there is a search bar with the text "iam" and a link labeled "IAM" which says "Manage access to AWS resources".

Identity and Access Management (IAM)

Dashboard

Access management

- Groups
- Users**
- Roles
- Policies
- Identity providers
- Account settings

Add user

Set user details

You can add multiple users at once with the same access type and permissions. [Learn more](#)

User name* [Add another user](#)

Select AWS access type

Select how these users will access AWS. Access keys and autogenerated passwords are provided in the last step. [Learn more](#)

Access type* **Programmatic access**
Enables an **access key ID** and **secret access key** for the AWS API, CLI, SDK, and other development tools.

AWS Management Console access
Enables a **password** that allows users to sign-in to the AWS Management Console.

Add user

Set permissions

[Add user to group](#) [Copy permissions from existing user](#) [Attach existing policies directly](#)

Get started with groups
You haven't created any groups yet. Using groups is a best-practice way to manage users' permissions by job functions, AWS service access, or your custom permissions. Get started by creating a group. [Learn more](#)

[Create group](#)

Set permissions boundary

Create group

Create a group and select the policies to be attached to the group. Using groups is a best-practice way

Group name

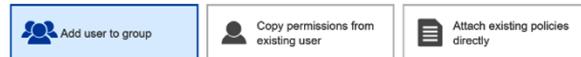
[Create policy](#) [Refresh](#)

Policy name	Type
<input type="checkbox"/> IAMFullAccess	AWS managed
<input type="checkbox"/> IAMReadOnlyAccess	AWS managed
<input type="checkbox"/> IAMSelfManageServiceSpecificCredentials	AWS managed
<input type="checkbox"/> IAMUserChangePassword	AWS managed
<input type="checkbox"/> IAMUserSSHKeys	AWS managed
<input checked="" type="checkbox"/> AWSElasticBeanstalkCustomPlatformforEC2Role	AWS managed
<input type="checkbox"/> AWSElasticBeanstalkEnhancedHealth	AWS managed
<input checked="" type="checkbox"/> AWSElasticBeanstalkFullAccess	AWS managed
<input type="checkbox"/> AWSElasticBeanstalkMulticontainerDocker	AWS managed
<input type="checkbox"/> AWSElasticBeanstalkReadOnlyAccess	AWS managed

Add user

1 2 3 4 5

Set permissions



Add user to an existing group or create a new one. Using groups is a best-practice way to manage user's permissions by job functions. [Learn more](#)

Add user to group

[Create group](#) [Refresh](#)

Search		Showing 1 result
Group	Attached policies	
<input checked="" type="checkbox"/> VisualStudioPublisherGroup	IAMFullAccess and 1 more	

Add user

1 2 3 4 5

Review

Review your choices. After you create the user, you can view and download the autogenerated password and access key.

User details

User name	VisualStudioUser
AWS access type	Programmatic access - with an access key
Permissions boundary	Permissions boundary is not set

Permissions summary

The user shown above will be added to the following groups.

Type	Name
Group	VisualStudioPublisherGroup

Tags

No tags were added.

Add user

1 2 3 4 5

Success

You successfully created the users shown below. You can view and download user security credentials. You can also email users instructions for signing in to the AWS Management Console. This is the last time these credentials will be available to download. However, you can create new credentials at any time.

Users with AWS Management Console access can sign-in at: <https://524015828413.signin.aws.amazon.com/console>

[Download .csv](#)

	User	Access key ID	Secret access key
<input checked="" type="checkbox"/>	VisualStudioUser	AKIAXUAOG7W62Z2OYFBN	***** Show

All services

bean

Elastic Beanstalk

Run and Manage Web Apps

IAM does not require region selection.

The screenshot shows two windows side-by-side. On the left is the 'Publish to AWS Elastic Beanstalk' dialog from the AWS Management Console. It has tabs for Application, Environment, AWS Options, VPC, Updates, Permissions, Options, and Review. The Application tab is selected. It includes fields for 'Account profile to use' (dropdown), 'Region' (dropdown set to 'US West (Oregon)'), and 'Deployment Target' with options 'Create a new application environment' (radio button selected) and 'Redeploy to an existing environment' (radio button unselected). Below these are 'Next' and 'Finish' buttons. On the right is a screenshot of the Visual Studio context menu for a project named 'Chapter 10 Final'. The menu items include Build, Rebuild, Clean, View, Analyze and Code Cleanup, Pack, Publish..., Publish to AWS Elastic Beanstalk... (which is highlighted with a red arrow), Configure Application Insights..., and Overview.

aws Publish to AWS Elastic Beanstalk

Publish can create a new application/environment or redeploy to an existing environment.

Profile

Account profile to use: Region: US West (Oregon)

Deployment Target

Create a new application environment

Redeploy to an existing environment:

Solution 'Chapter 10 Final' (1 of 1 project)

- Connected
- Dependencies
- Properties
- wwwroot
- Areas
- Controllers
- Data
- Models
- Views
 - app.db
 - appsettings.json
 - Program.cs

Build

Rebuild

Clean

View

Analyze and Code Cleanup

Pack

Publish...

Publish to AWS Elastic Beanstalk...

Configure Application Insights...

Overview

Profile Name: A profile name of "default" allows the SDK to find credentials when no explicit profile name is specified in your code or application configuration settings.

Storage Location: Using the shared credentials file, the profile's AWS credentials will be stored in the <home-directory>.aws/credentials file. The profile will be accessible to all AWS SDKs and tools.

Access Key ID:

Secret Access Key:

Account Number*:

Account Type:

Account information can be found at: <http://aws.amazon.com/developers/access-keys/>

* Account Number is an optional field used for constructing Amazon resource names

aws Publish to AWS Elastic Beanstalk

Publish can create a new application/environment or redeploy to an existing environment.

Application

- Environment Options
- VPC
- Updates
- Permissions Options
- Review

Profile

Account profile to use: Region:

Deployment Target

Create a new application environment
 Redeploy to an existing environment:

aws Application Environment

Enter the details for your new application environment. To create a new environment for an existing select the appropriate application.

Application

- Environment Options
- VPC
- Updates
- Permissions Options
- Review

Application

Name:

Environment

Name:

URL

**The requested URL is available*

Amazon EC2 Launch Configuration

Container type *:

Instance type *: Key pair *: Enter the name of a key pair that will be created during deployment.

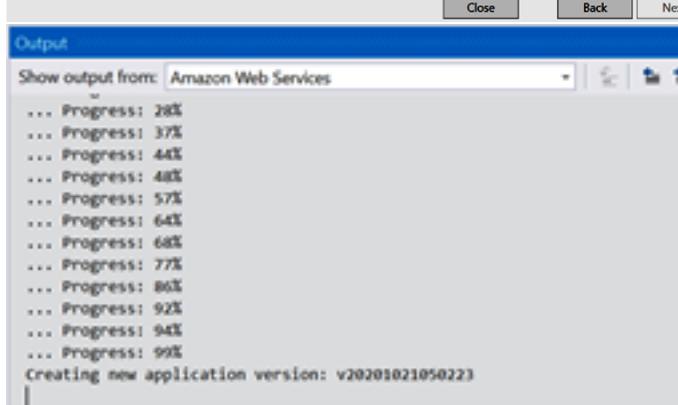
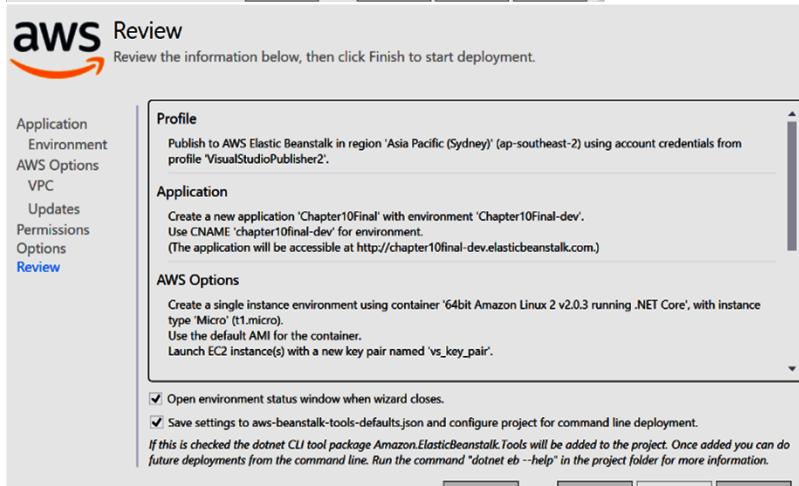
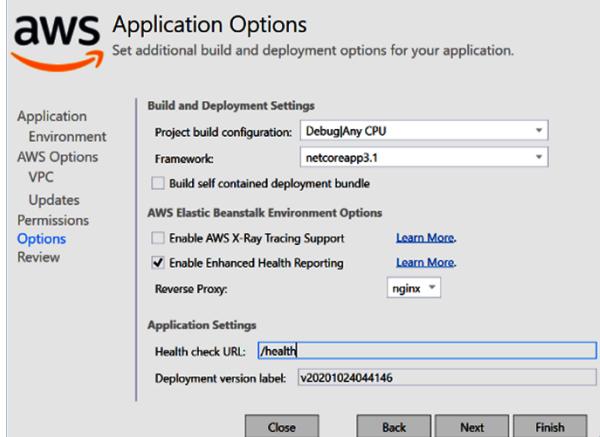
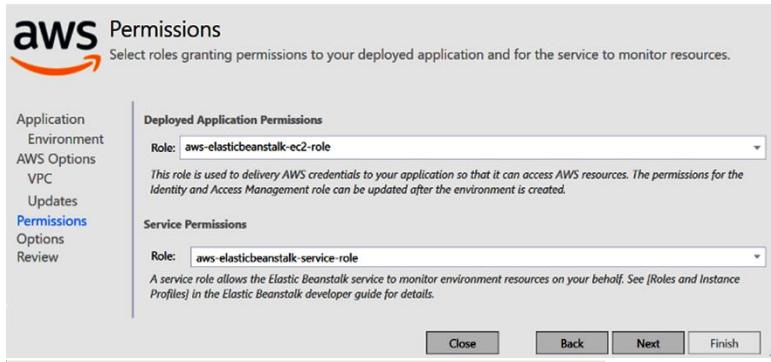
Use non-default VPC Single instance environment Enable Rolling Deployments

Load balancer type

Choose the type of load balancer to use when not creating a single instance environment.

Application

An Application Load Balancer makes routing decisions at the application layer (HTTP/HTTPS).



Screenshot of the AWS Elastic Beanstalk console showing the environment configuration and monitoring logs.

Env. Chapter10Final.dev - X Asia Pacific (Sydney) DB Instances appsettings.json

Apply Changes | Connect to Instance | Restart App | Environment | Refresh

URL: <http://chapter10final-dev.ap-southeast-2.elasticbeanstalk.com/>

Application: Chapter10Final

Container Type: 64bit Amazon Linux 2 v2.0.3 running .NET Core

Status: **Launching**

Events Filter:

Monitoring	Event Time	Event Type	Version Label	Event Details
Resources	10/21/2020 6:05:14 PM	INFO		Created EIP: 54.66.134.138
AWS X-Ray	10/21/2020 6:04:59 PM	INFO		Created security group named: sg-01f0c1ef57a8bc243
Server	10/21/2020 6:04:38 PM	INFO		Using elasticbeanstalk-ap-southeast-2-524015828413 as Amazon S3 storage bucket for environment data. createEnvironment is starting.

Events Filter:

Monitoring	Event Time	Event Type	Version Label	Event Details
Resources	10/24/2020 6:20:22 PM	INFO	v20201024043922	Environment health has transitioned from Warning to Ok.
AWS X-Ray	10/24/2020 6:19:22 PM	WARN	v20201024043922	Environment health has transitioned from Ok to Warning. 100.0 % of the requests are failing with HTTP 5xx.
	10/24/2020 5:44:19 PM	INFO		Successfully launched environment: Chapter10Final-prod

Solution Explorer

Search Solution Explorer (Ctrl+Shift+F)

Solution 'Chapter 10 Final' (1 of 1 project)

- Chapter 10 Final
 - Connected
 - Dependents
 - Properties
 - wwwroot
 - Controller
 - Models
 - Views
 - appsettings
 - aws-bean...
 - HealthChe...

Build

Publish...

Publish to AWS Elastic Beanstalk...

Configure Application Insights...

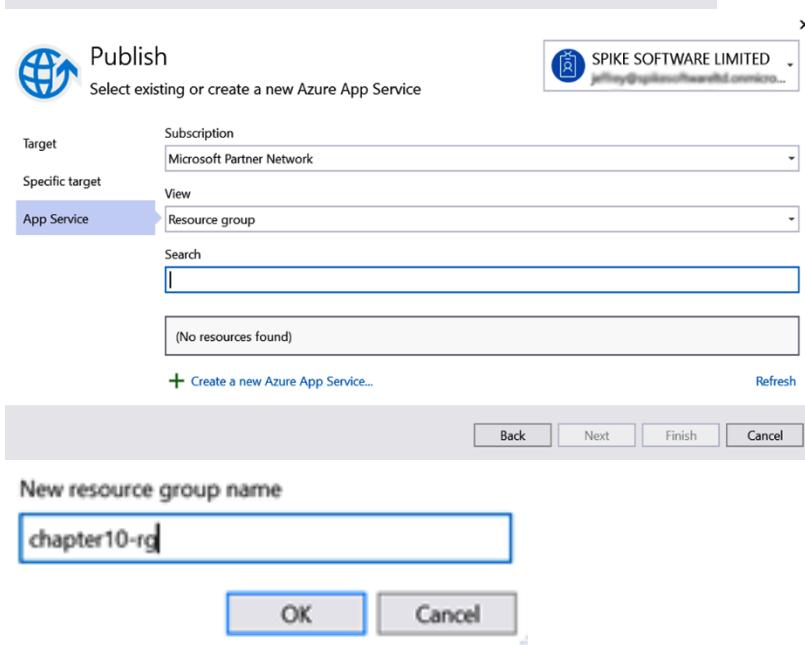
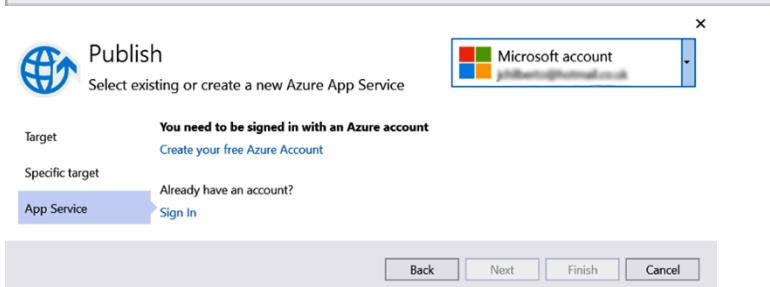
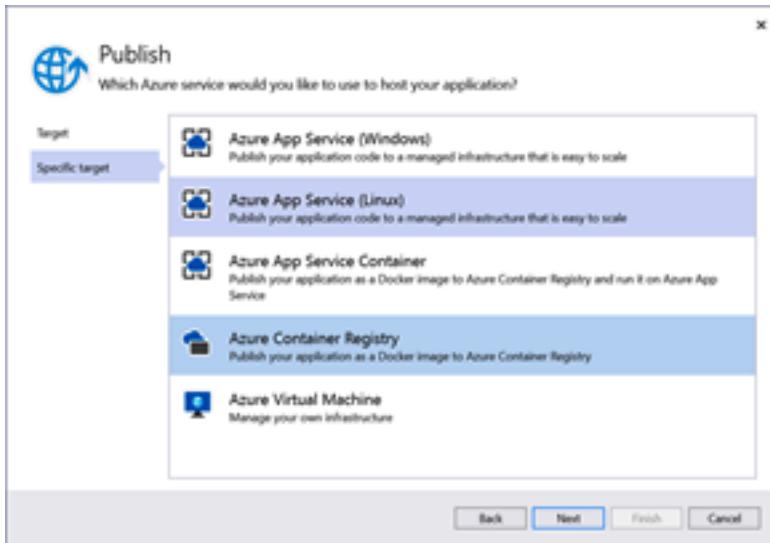
Publish

Where are you publishing today?

Target

- Azure Publish your application to the Microsoft cloud
- Docker Container Registry Publish your application to any supported Container Registry that works with Docker images
- Folder Publish your application to a local folder or file share
- FTP/FTPS Server Publish your application to an FTP/FTPS server
- Web Server (IIS) Publish your application to IIS using Web Deploy or Web Deploy Package
- Import Profile Import your publish settings to deploy your app

Back Next Finish Cancel





Hosting Plan

Chapter10Final20201024193800Plan

Location

Australia East

Size

S1 (1 core, 1.75 GB RAM)

OK

Cancel



Name

Chapter10Final20201024193800

Subscription

Microsoft Partner Network

Resource group

chapter10-rg*

New...

Hosting Plan

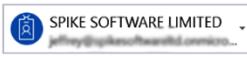
Chapter10Final20201024193800Plan* (Australia East, S1)

New...

Export...

Create

Cancel



Target

Subscription

Microsoft Partner Network

Specific target

View

App Service

Resource group

Search

Chapter10Final20201024193800

- ◀ chapter10-rg
- ◀ Chapter10Final20201024193800
- ▶ Deployment Slots

+ Create a new Azure App Service...

Refresh

Back Next Finish Cancel

Publish

Deploy your app to a folder, IIS, Azure, or another destination. [More info](#)

Chapter10Final20201024193800 - Web Deploy

New Edit Rename Delete Restore

Summary		Actions	
Site URL:	https://chapter10final20201024193800.azurewebsites.net	Preview changes	
Resource group:	chapter10-rg	Manage in Cloud Explorer	
Configuration:	Release	Manage Azure App Service settings	
Target framework:	netcoreapp3.1	Manage in Azure portal	
Deployment mode:	Framework-dependent	View streaming logs	
Target runtime:	Portable	Open troubleshooting guide	

Output

Show output from: Build

```

Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery\dist\jquery.min.map).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery\LICENSE.txt).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation\dist\additional-methods.js).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation\dist\additional-methods.min.js).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation\dist\jquery.validate.js).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation\dist\jquery.validate.min.js).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation\LICENSE.md).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation-unobtrusive\jquery.validate.unobtrusive.js).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation-unobtrusive\jquery.validate.unobtrusive.min.js).
Adding file (Chapter10Final20201024193800\wwwroot\lib\jquery-validation-unobtrusive\LICENSE.txt).
Publish Succeeded.
----- Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped -----
----- Publish: 1 succeeded, 0 failed, 0 skipped -----

```

Web Publish Activity

Publish: Chapter10Final20201024193800 - Web Dep

Overall status Green

Publish Succeeded.

<https://chapter10final20201024193800.azurewebsites.net/>

[Save](#) [Discard](#) [Refresh](#) [Metrics](#) [Send us your feedback](#)

Your site has a single instance which will not be removed if it becomes unhealthy. However, you can still set up Azure Monitor Alerts based on the health status.

Health check

Health-check configuration changes will restart your app. To minimize impact to production apps, we recommend setting it up on a staging slot and swapping it into production.

Health check increases your application's availability by removing unhealthy instances from the load balancer. If your instance remains unhealthy, it will be restarted. [Learn more](#)

Health check:

Enable

Disable

Path:

/health

This is the path we'll ping to check for unhealthy instances.

Monitoring

Alerts

Metrics

Logs

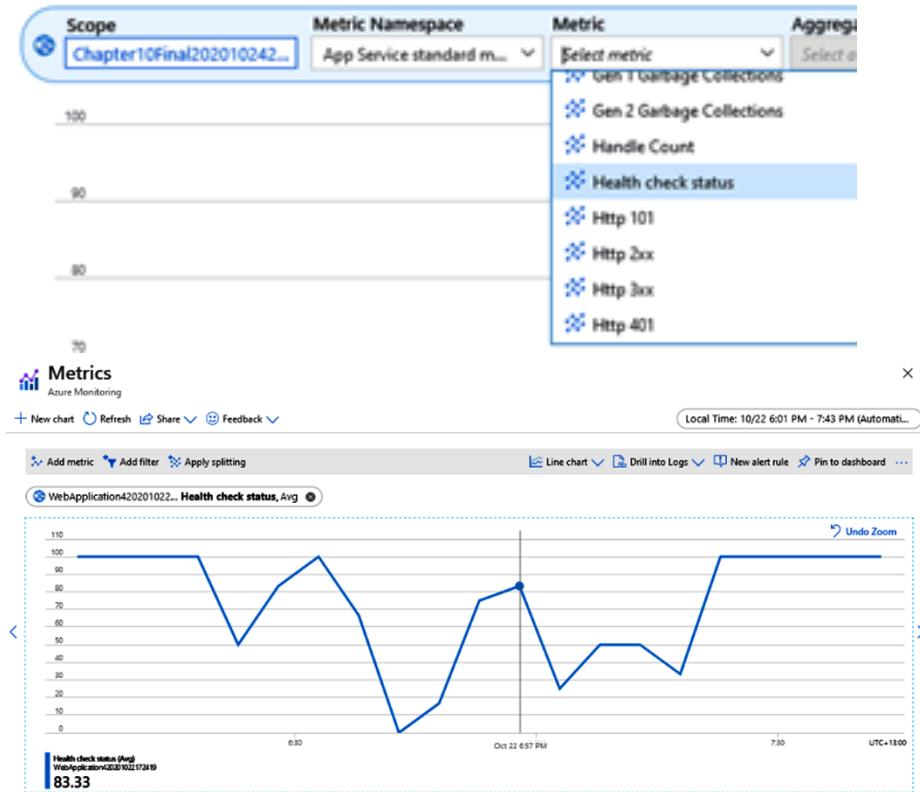
Health check (Preview)

Diagnostic settings (preview)

App Service logs

Log stream

Process explorer

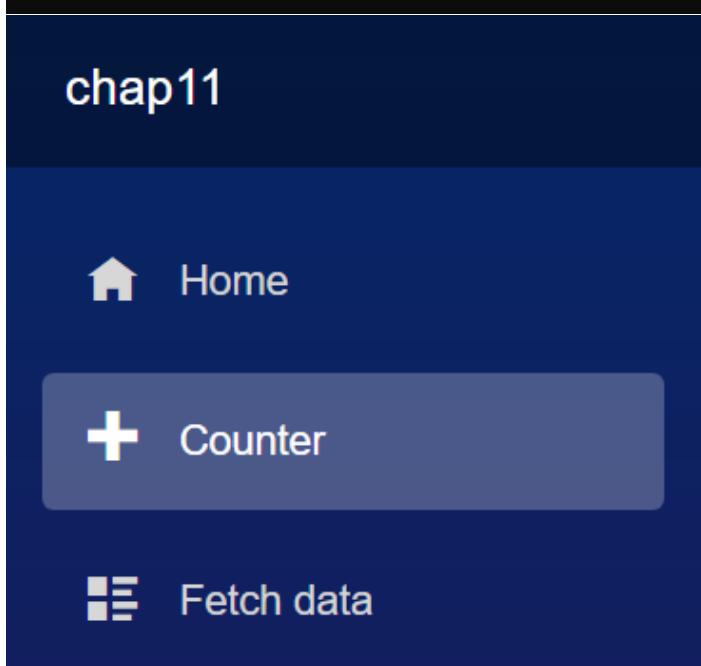


Chapter 11: Browser and Visual Studio Debugging

```
C:\Users\andreas>dotnet --info
.NET SDK (reflecting any global.json):
  Version:  5.0.100-preview.5.20279.10
  Commit:   8139f1b74e

Runtime Environment:
  OS Name:     Windows
  OS Version:  10.0.20150
  OS Platform: Windows
  RID:         win10-x64
  Base Path:   C:\Program Files\dotnet\sdk\5.0.100-preview.5.20279.10\

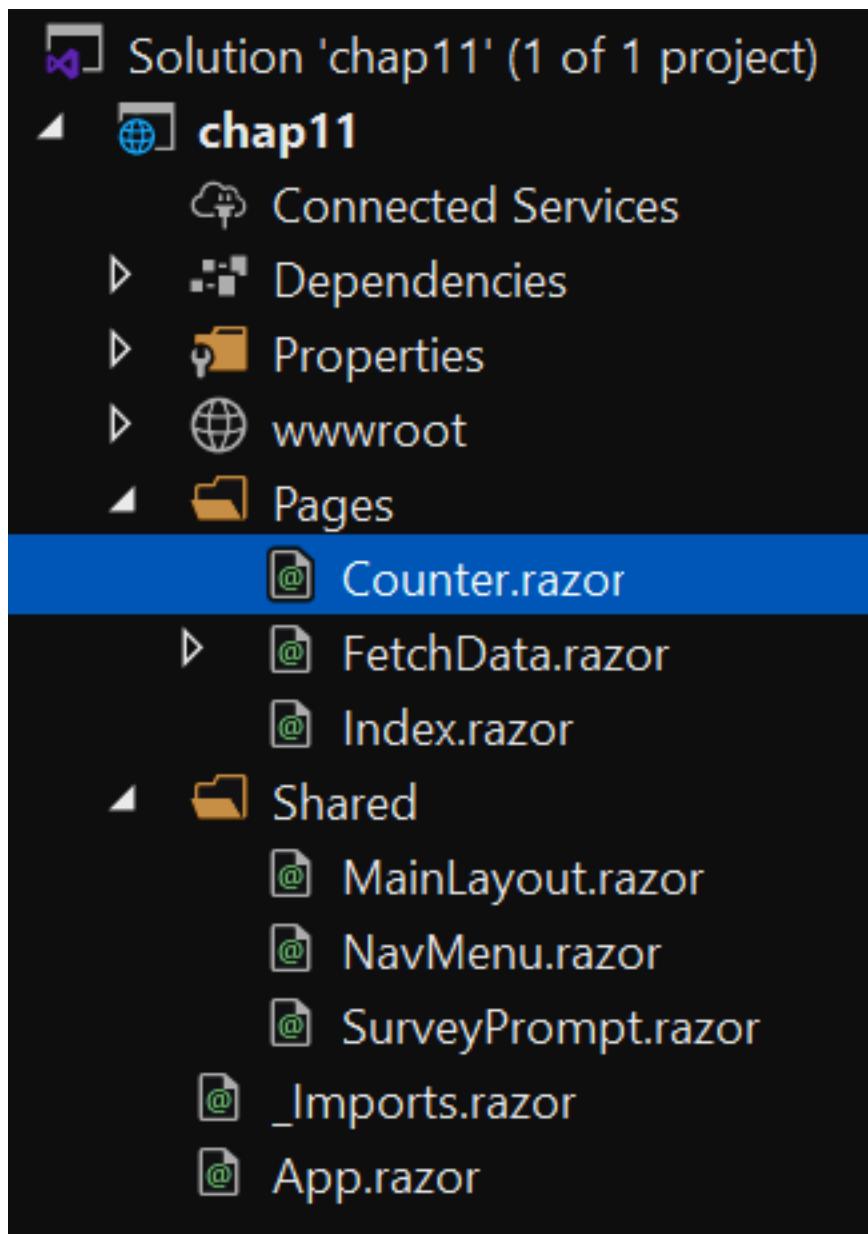
Host (useful for support):
  Version: 5.0.0-preview.5.20278.1
  Commit:  4ae4e2fe08
```

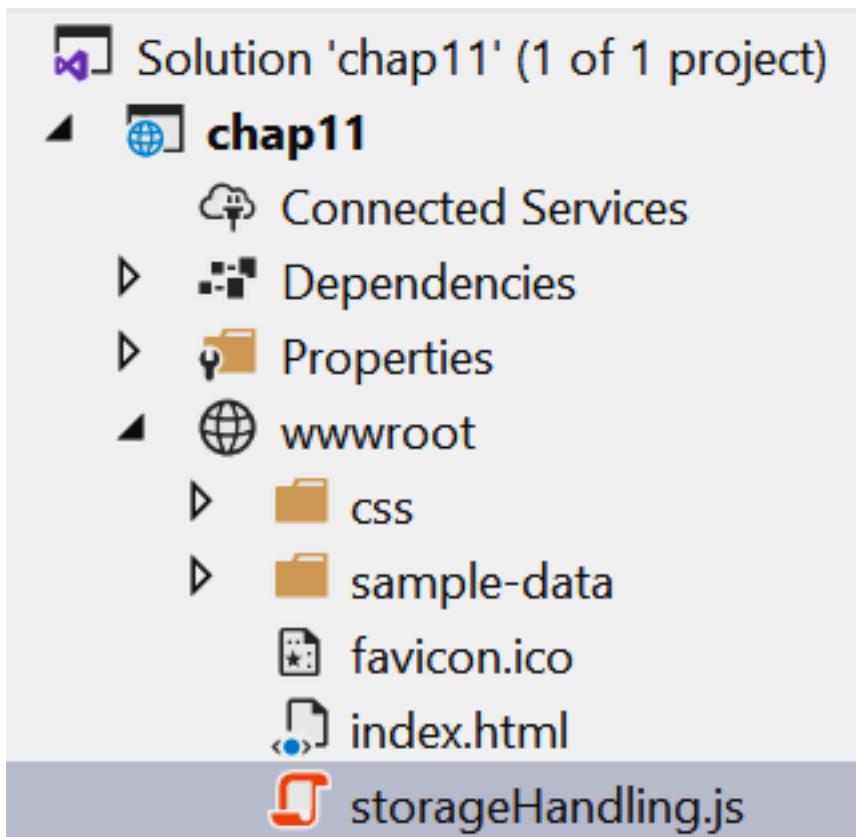


Counter

Current count: 0

[Click me](#)





The image displays three screenshots of a web application titled "Counter". Each screenshot shows a navigation bar with "Home", "Counter" (highlighted), and "Fetch data". The main content area displays a table with four rows: "Page", "Session", "Local", and a "Click me" button.

Screenshot 1 (Top Left): Shows the "Counter" page with a count of 7 for all three storage types (Page, Session, Local). The "About" link is visible at the top right.

	Count
Page	7
Session	7
Local	7

Screenshot 2 (Top Right): Shows the "Counter" page with a count of 0 for "Page" and 7 for "Session" and "Local". The "About" link is visible at the top right.

	Count
Page	0
Session	7
Local	7

Screenshot 3 (Bottom): Shows the "Counter" page with a count of 0 for "Page" and "Session", and 7 for "Local". The "About" link is visible at the top right.

	Count
Page	0
Session	0
Local	7

The screenshot shows a browser window with two tabs, both titled "chap11". The left tab displays a Blazor application with a "Counter" component. The right tab also displays a "Counter" component. Below the browser is the Chrome DevTools interface.

The DevTools navigation bar at the top has several tabs: Elements, Console, Sources, Network, Performance, Memory, Application, Security, and Lighthouse. The "Application" tab is highlighted with a red box. The bottom navigation bar also has tabs for Elements, Console, Sources, Network, Performance, Memory, Application, and Security. The "Elements" tab is highlighted with a red box.

The main content area of the DevTools shows the HTML code for the Blazor application. The code includes the standard DOCTYPE, HTML, head, and body sections. In the body section, there is a div with the id "blazor-error-ui". This div contains several script tags. One script tag has a src attribute pointing to "framework/blazor.webassembly.js". Another script tag has a src attribute pointing to "content/Blazor.Extensions.Logging/blazor.extensions.logging.js" with the defer attribute set. A third script tag has a src attribute pointing to "storageHandling.js". There are also script tags with type="text/javascript" and a script tag with a src attribute pointing to "framework/wasm.dotnet.3.2.0.js" with the defer, integrity="sha256-", and crossorigin="anonymous" attributes.

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0, maximum-scale=1.0, user-scalable=no">
    <title>Chapter11</title>
    <base href="/">
    <link href="css/bootstrap/bootstrap.min.css" rel="stylesheet">
    <link href="css/app.css" rel="stylesheet">
  </head>
  <body>
    <app>...</app>
    <div id="blazor-error-ui">...</div> == $0
    <script src="framework/blazor.webassembly.js"></script>
    <script src="content/Blazor.Extensions.Logging/blazor.extensions.logging.js" defer></script>
    <script src="storageHandling.js"></script>
    <script type="text/javascript">...</script>
    <script src="framework/wasm.dotnet.3.2.0.js" defer integrity="sha256-mPoqx7XczFHBWk3gRNn0hc9ekG10vKKY4XiKRY5Mj5U=" crossorigin="anonymous"></script>
  </body>
</html>
```

The screenshot shows a browser developer tools window with the following tabs:

- Elements
- Console
- Sources
- Network
- Performance
- Memory
- Application
- Security
- Lighthouse

The **Elements** tab displays the DOM tree:

```
<!DOCTYPE html>
<html>
  ><head>...</head>
  ><body>
    ><app>
      <!--!-->
      <!--!-->
      <!--!-->
      <!--!-->
      <!--!-->
    ><div class="sidebar">...</div>
    <!--!-->
    ><div class="main">
      <!--!-->
      <!--!-->
    ><div class="top-row px-4">...</div>
    ><div class="content px-4">
      <!--!-->
      <!--!-->
      <!--!-->
      <h1>Counter</h1>
    ... ><table class="table">...</table> == $0
      <!--!-->
      <button class="btn btn-primary">Click me</button>
    <!--!-->
  ></div>
  <!--!-->
</div>
```

The **Styles** tab shows the CSS styles for the selected element (the table). An arrow points from the table node in the Elements tree to the corresponding style block in the Styles tab.

The **Computed** tab shows the final computed styles for the element, including the user agent stylesheet.

A context menu is open over a button labeled "Click me". The menu items are:

Back	Alt+Left Arrow
Forward	Alt+Right Arrow
Reload	Ctrl+R
Save as...	Ctrl+S
Print...	Ctrl+P
Cast...	
Translate to English	
View page source	Ctrl+U
Inspect	Ctrl+Shift+I

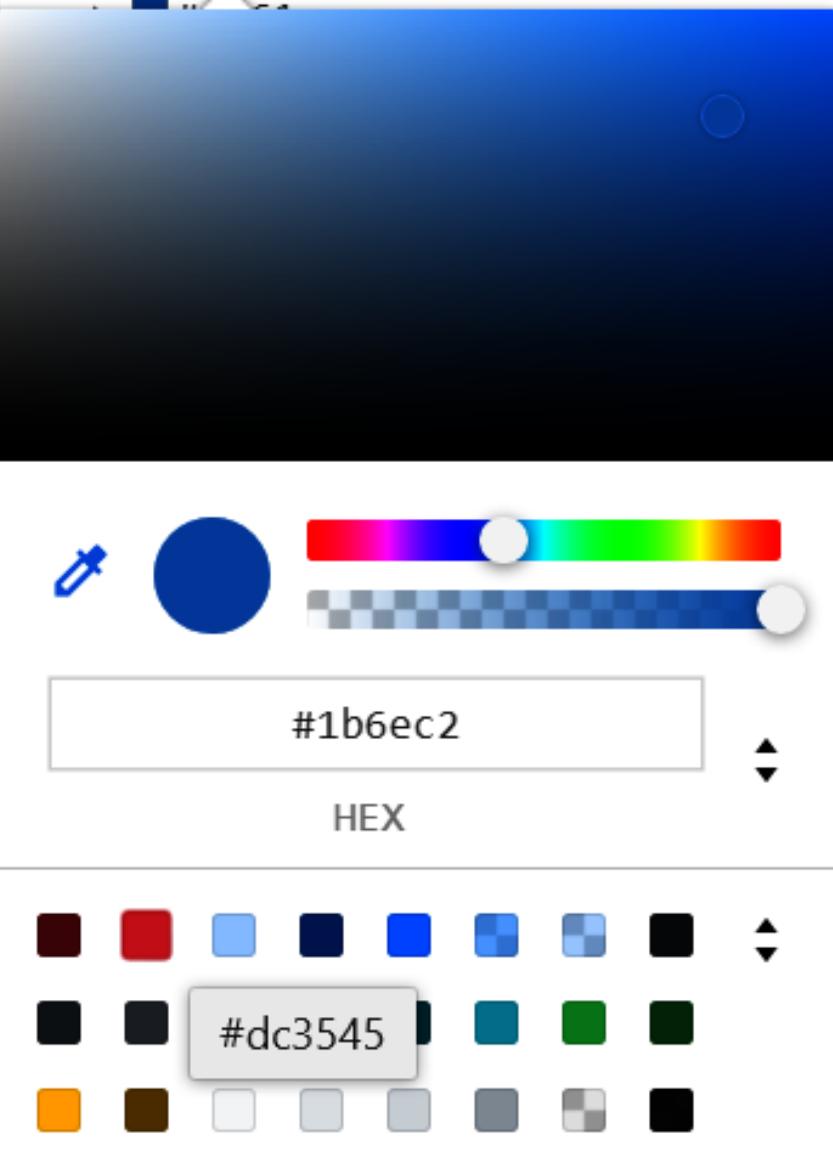
```
        cursor: pointer;
    }

.btn-primary {                                                 app.css:11
    color: #fff;
    background-color: #1b6ec2;
    border-color: #1b6ec2;
}

.btn-primary {
    color: #fff;
    background-color: #1b6ec2;
    border-color: #1b6ec2;
}

@media (prefixed-min-width: 0) {
    .btn {
        transition: all 0.2s ease-in-out;
    }
}

.btn {
    display: inline-block;
    font-weight: bold;
    color: #1b6ec2;
    text-align: center;
    vertical-align: middle;
    -webkit-user-select: none;
    -moz-user-select: none;
    -ms-user-select: none;
    user-select: none;
    background-color: transparent;
    border: 1px solid transparent;
    padding: .375rem .75rem;
    font-size: 1rem;
}
```



A color picker interface is overlaid on the code editor. It features a large blue circular preview at the top. Below it is a horizontal color bar with a slider set to blue. A color palette grid follows, with a specific color square (#dc3545) highlighted. A text input field shows the hex code "#1b6ec2". Below the input are buttons for 'HEX' and 'RGB'. The bottom part of the picker contains a grid of small color swatches.

The screenshot shows the developer tools' Elements tab for a Blazor application. The application's UI is displayed in the top right, showing a 'Counter' component with a value of 0. The developer tools interface includes a toolbar with icons for back, forward, refresh, and search, followed by tabs for Elements, Console, Sources, Network, Performance, Memory, Application, Security, Lighthouse, and settings.

Elements Tab:

- Toolbar:** Includes icons for back, forward, refresh, and search, followed by tabs for Elements, Console, Sources, Network, Performance, Memory, Application, Security, Lighthouse, and settings.
- Console:** Shows the following log entries:
 - Debugging hotkey: Shift+Alt+D (when application has focus)
 - blazor Loaded 6.16 MB resources blazor.webassembly.js:1
 - This application was built with linking (tree shaking) disabled. Published applications will be significantly smaller.
 - mono_wasm_runtime_ready fe00e07a-5519-4dfe-b35a-f867dbaf2e28 dotnet.3.2.0.js:1
 - GetLocalStorage called for key:UserState storageHandling.js:14
 - GetLocalStorage called for key:UserState storageHandling.js:14

Log Level Selection: A dropdown menu labeled "All levels ▾" is shown, with "Default" selected.

Log Level Options:

- Verbose:** Checked
- Info:** Checked
- Warnings:** Checked
- Errors:** Checked

Blazor Log Output:

```

▼ blazor Loaded 6.16 MB resources
  This application was built with linking (tree shaking) disabled. Published applications will be significantly smaller.
  ▼ Loaded 6.16 MB resources from cache
    ▼ Object [1]
      ► Blazor.Extensions.Logging.dll: {responseBytes: 6020}
      ► Chapter11.dll: {responseBytes: 11929}
      ► Chapter11.pdb: {responseBytes: 8337}
      ► Microsoft.AspNetCore.Components.Forms.dll: {responseBytes: 15132}
      ► Microsoft.AspNetCore.Components.Web.dll: {responseBytes: 24344}
      ► Microsoft.AspNetCore.Components.WebAssembly.dll: {responseBytes: 25976}

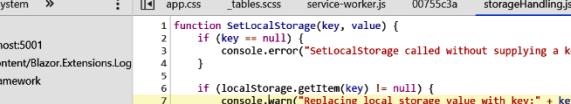
```

Bottom Log Area:

```

Debugging hotkey: Shift+Alt+D (when application has focus)
► blazor Loaded 6.16 MB resources blazor.webassembly.js:1
  This application was built with linking (tree shaking) disabled. Published applications will be significantly smaller.
  mono_wasm_runtime_ready fe00e07a-5519-4dfe-b35a-f867dbaf2e28 dotnet.3.2.0.js:1
  GetLocalStorage called for key:UserState storageHandling.js:14
  GetLocalStorage called for key:UserState storageHandling.js:14
  ▲ Replacing local storage value with key:UserState storageHandling.js:14
  GetLocalStorage called for key:UserState storageHandling.js:14
  ▲ Replacing local storage value with key:UserState storageHandling.js:14
  ► |

```

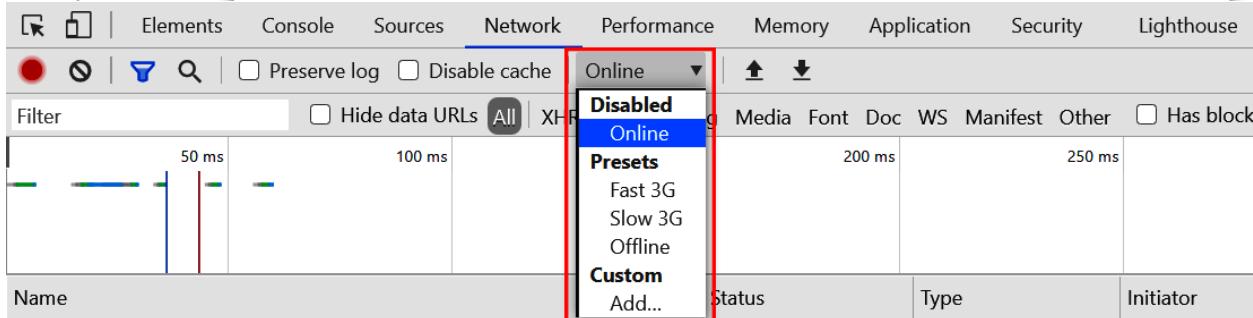


```
function SetLocalStorage(key, value) {
    if (key == null) {
        console.error("SetLocalStorage called without supplying a key value.");
    }
    if (localStorage.getItem(key) == null) {
        console.warn("Replacing local storage value with key: " + key);
    }
    localStorage.setItem(key, value);
}

function GetLocalStorage(key) {
    console.debug("GetlocalStorage called for key: " + key);
    return localStorage.getItem(key);
}

function SetSessionStorage(key, value) {
    sessionStorage.setItem(key, value);
}

function GetSessionStorage(key) {
    return sessionStorage.getItem(key);
}
```



```
[{"date": "2020-11-24T10:22:10.2154382+13:00", "temperatureC": 27, "temperatureF": 80, "summary": "Chilly"}, {"date": "2020-11-25T10:22:10.2175576+13:00", "temperatureC": -17, "temperatureF": 2, "summary": "Balmy"}, {"date": "2020-11-26T10:22:10.2175608+13:00", "temperatureC": 27, "temperatureF": 80, "summary": "Mild"}, {"date": "2020-11-27T10:22:10.2175612+13:00", "temperatureC": 22, "temperatureF": 71, "summary": "Freezing"}, {"date": "2020-11-28T10:22:10.2175615+13:00", "temperatureC": 5, "temperatureF": 40, "summary": "Sweltering"}]
```



No internet

Try:

- Checking the network cables, modem, and router
- Reconnecting to Wi-Fi
- [Running Windows Network Diagnostics](#)

The screenshot shows the Microsoft Edge developer tools Network tab. The tab bar includes Elements, Console, Sources, Network (which is selected), Performance, Memory, Application, and more. Below the tab bar are buttons for Preserve log, Disable cache, Offline, and download controls. A filter bar allows selecting between XHR, JS, CSS, Img, Media, Font, Doc, WS, Manifest, and Other. There are also checkboxes for Has blocked cookies and Blocked Requests.

The main area displays a timeline from 1000 ms to 7000 ms. A list of network requests is shown:

Name	Status	Type	Initiator	Size	Time	Waterfall
weatherforecast	(failed)	document	Other	0 B	2 ms	
data:image/png;base...	200	png	chrome-error://c...	(memor...	0 ms	
data:image/png;base...	200	png	chrome-error://c...	(memor...	0 ms	
<input checked="" type="checkbox"/> data:image/png;base...	200	png	chrome-error://c...	(memor...	0 ms	
weatherforecast	(failed)	document	Other	0 B	3 ms	
weatherforecast	(failed)	document	Other	0 B	2 ms	

Application

- Manifest
- Service Workers
- Clear storage

Storage

- ▼ Local Storage
 - https://localhost:5001
- ▼ Session Storage
 - https://localhost:5001
- IndexedDB
- Web SQL

Key	Value
Languages	{"Java":2,"TSQL":3,"C#":5}
BestCats	{"Bengal":4,"Siamese":2,"Calico":3}
UserState	{"Counter":35}
Fruit	{"Cherry":10,"Apple":4,"Orange":5}

Application

- Manifest
- Service Workers
- Clear storage

Storage

- ▼ Local Storage
 - https://localhost:5001
- ▼ Session Storage
 - https://localhost:5001
- IndexedDB
- Web SQL

Cache

- ▼ Cache Storage
 - blazor-resources/- - https://localhost:5001
 - Application Cache

Background Services

- Background Fetch
- Background Sync
- Notifications
- Payment Handler
- Periodic Background Sync
- Push Messaging

Frames

- ▼ top
- ▼ Fonts
 - open-iconic.woff

Clear storage

https://localhost:5001

Usage

71.7 MB used out of 81467 MB storage quota.

[Learn more](#)

71.7 MB Cache Storage
269 B Service Workers
71.7 MB Total

[Clear site data](#)

Application

Unregister service workers

Storage

Local and session storage

IndexedDB

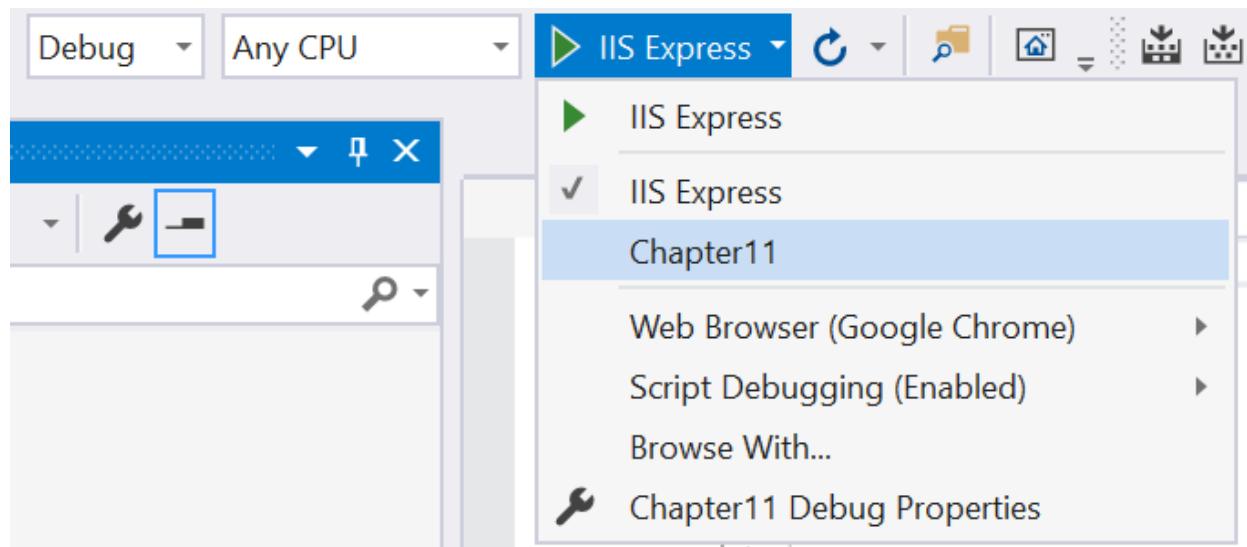
Web SQL

Cookies

Cache

Cache storage

Application cache



Solution Explorer



Search Solution Explorer (Ctrl+;)

Solution 'Chapter11' (1 of 1 project)

Chapter11

Connected Services

Dependencies

Properties

launchSettings.json

wwwroot

Pages

Shared

_Imports.razor

App.razor

ApplicationStorage.cs

IStorageProvider.cs

LocalStorageProvider.cs

Program.cs

SessionStorageProvider.cs

UserState.cs

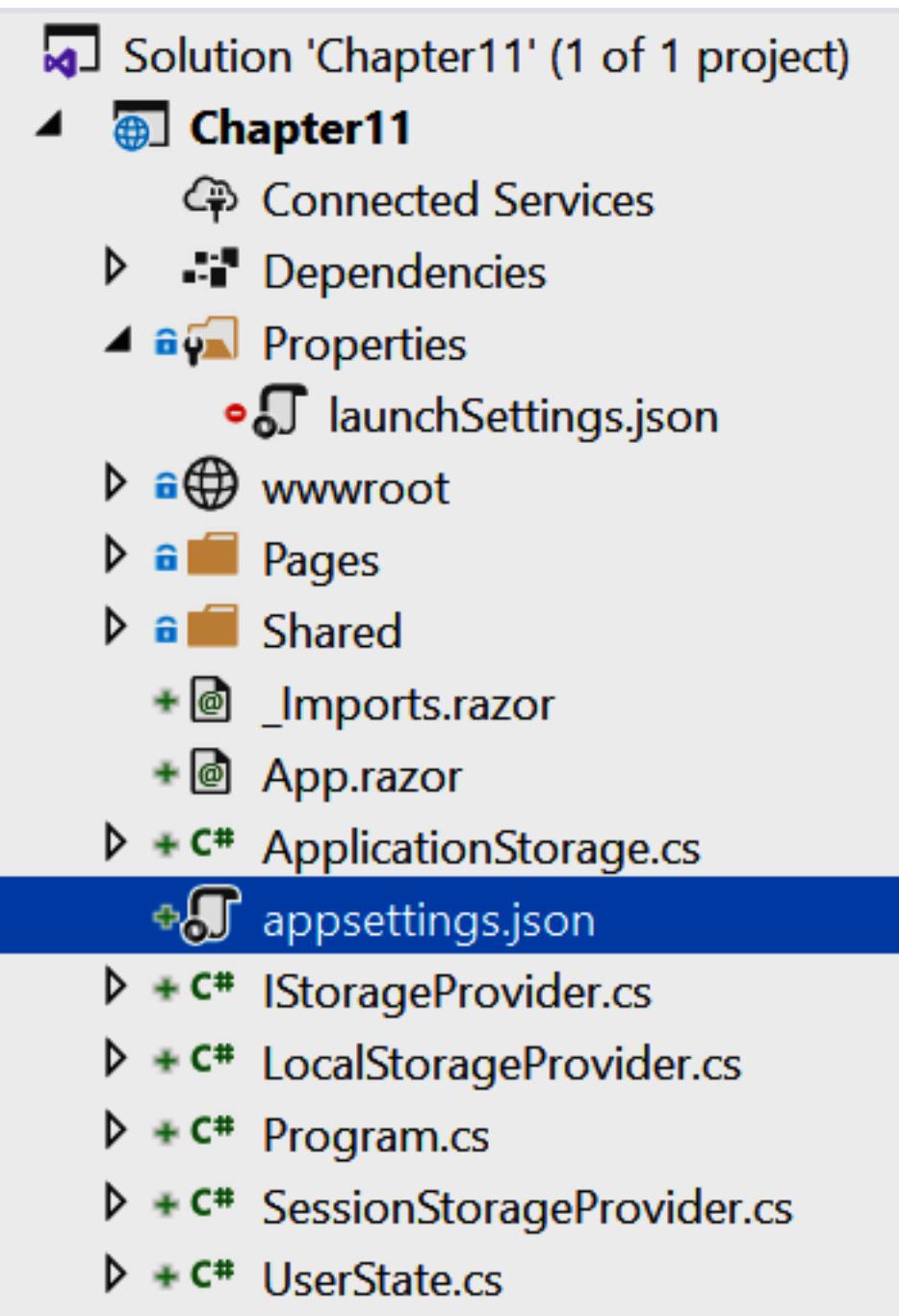
The screenshot shows the context menu for the 'Chapter11' project in Visual Studio. The menu items are:

- Web Browser (Google Chrome)
- Script Debugging (Enabled)
- Browse With...

Below this, under 'Chapter11 Debug Properties', the 'Web Browser' dropdown is set to 'Google Chrome'. Other options include Internet Explorer, Microsoft Edge, and Microsoft Edge (2). A 'Select Web Browsers...' link is also present.

At the bottom, a terminal window shows the application's startup logs:

```
Microsoft.Hosting.Lifetime[0]
  Now listening on: https://localhost:5001
Microsoft.Hosting.Lifetime[0]
  Microsoft.Hosting.Lifetime[0]
    Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
Microsoft.Hosting.Lifetime[0]
  Microsoft.Hosting.Lifetime[0]
    Microsoft.Hosting.Lifetime[0]
      Content root path: C:\Users\Jeff\Source\Repos\ASP.NET-Core-Blazor\Chapter11
      Now listening on: http://127.0.0.1:55898
info: Microsoft.Hosting.Lifetime[0]
  Microsoft.Hosting.Lifetime[0]
    Microsoft.Hosting.Lifetime[0]
      Application started. Press Ctrl+C to shut down.
Microsoft.Hosting.Lifetime[0]
  Microsoft.Hosting.Lifetime[0]
    Microsoft.Hosting.Lifetime[0]
      Hosting environment: Production
info: Microsoft.Hosting.Lifetime[0]
  Microsoft.Hosting.Lifetime[0]
    Content root path: C:\Users\Jeff\source\repos\asp.net-core-blazor\chapter11
    Microsoft.AspNetCore.Hosting.Diagnostics[1]
      Request starting : HTTP/1.1 GET http://127.0.0.1:55898/ws-prod
user:[2]C:\Users\Jeff\source\repos\asp.net-core-blazor\chapter11
info: Microsoft.AspNetCore.Routing.EndpointMiddleware[0]
  Executing endpoint : /ws-proxy HTTP/GET
```



↓

The screenshot shows a debugger interface with a vertical stack of green rounded rectangles on the left, each containing a log level: Trace, Debug, Information, Warning, Error, Critical, and None. A large downward-pointing arrow is centered between the log levels and the code editor. To the right of the arrow is a code editor window.

Code Editor Content:

```

Chapter11 JavaScript Content Files - GetSessionStorage
1 function SetLocalStorage(key, value) {
2     if (key == null) {
3         console.error("SetLocalStorage called without supplying a key value.");
4     }
5
6     if (localStorage.getItem(key) != null) {
7         console.warn("Replacing local storage value with key:" + key);
8     }
9
10    localStorage.setItem(key, value);
11}

18  public async Task<UserState> GetUserState()
19  {
20      var value = await StorageProvider.Get("UserState");
21
22      if (value == null)
23      {
24          Logger.LogDebug("UserState initialized.");
25          return new UserState();
26      }
27
28      return JsonSerializer.Deserialize<UserState>(value);
29

```

Annotations:

- A red dot is placed on line 6 of the JavaScript code.
- A red dot is placed on line 24 of the C# code.
- A yellow box highlights the line of code: `Logger.LogDebug("UserState initialized.");`
- A red circular arrow icon is located on the far left of the code editor's vertical scrollbar.

Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q)

Windows

- Continue F5
- Break All Ctrl+Alt+Break
- Stop Debugging Shift+F5
- Detach All
- Attach Unity Debugger
- Terminate All
- Restart Ctrl+Shift+F5
- Apply Code Changes Alt+F10
- Performance Profiler... Alt+F2
- Relaunch Performance Profiler
- Attach to Process... Ctrl+Alt+P

Breakpoints Ctrl+D, B

Exception Settings Ctrl+Alt+E

Output

Show Diagnostic Tools Ctrl+Alt+F2

GPU Threads

Tasks Ctrl+Shift+D, K

Parallel Stacks Ctrl+D, S

Parallel Watch

Watch

Autos Ctrl+D, A

Locals Ctrl+D, L

Immediate Ctrl+D, I

Locals

Name	Value	Type
this	Chapter11.ApplicationStorage<Chapter11.SessionStorageProvider>	object
value	null	object

Chapter11 JavaScript Content Files

```

1 function SetLocalStorage(key, value) {
2     if (key == null) {
3         console.error("SetLocalStorage called without supplying a key value.");
4     }
5
6     if (localStorage.getItem(key) != null) {
7         console.warn("Replacing local storage value with key:" + key);
8     }
9
10    localStorage.setItem(key, value);
11 }
```

Locals

Name	Value	Type
key	'UserState'	string
this	Window	object
value	'{"Counter":200}'	string
Global		

Debug Test Analyze Tools Extensions

Windows ►

- ▶ Continue F5
- Break All Ctrl+Alt+Break
- Stop Debugging Shift+F5
- ✗ Detach All
- 📦 Attach Unity Debugger
- Terminate All
- ↻ Restart Ctrl+Shift+F5
- ✓= Apply Code Changes Alt+F10
- ℳ Performance Profiler... Alt+F2
- ℳ Relaunch Performance Profiler
- ⚙️ Attach to Process... Ctrl+Alt+P

Other Debug Targets ►

- ⬇ Step Into F11
- ⟳ Step Over F10
- ⬆ Step Out Shift+F11

Toggle Breakpoint F9

New Breakpoint ►

- ✖ Delete All Breakpoints Ctrl+Shift+F9
- ⌚ Disable All Breakpoints

Clear All DataTips

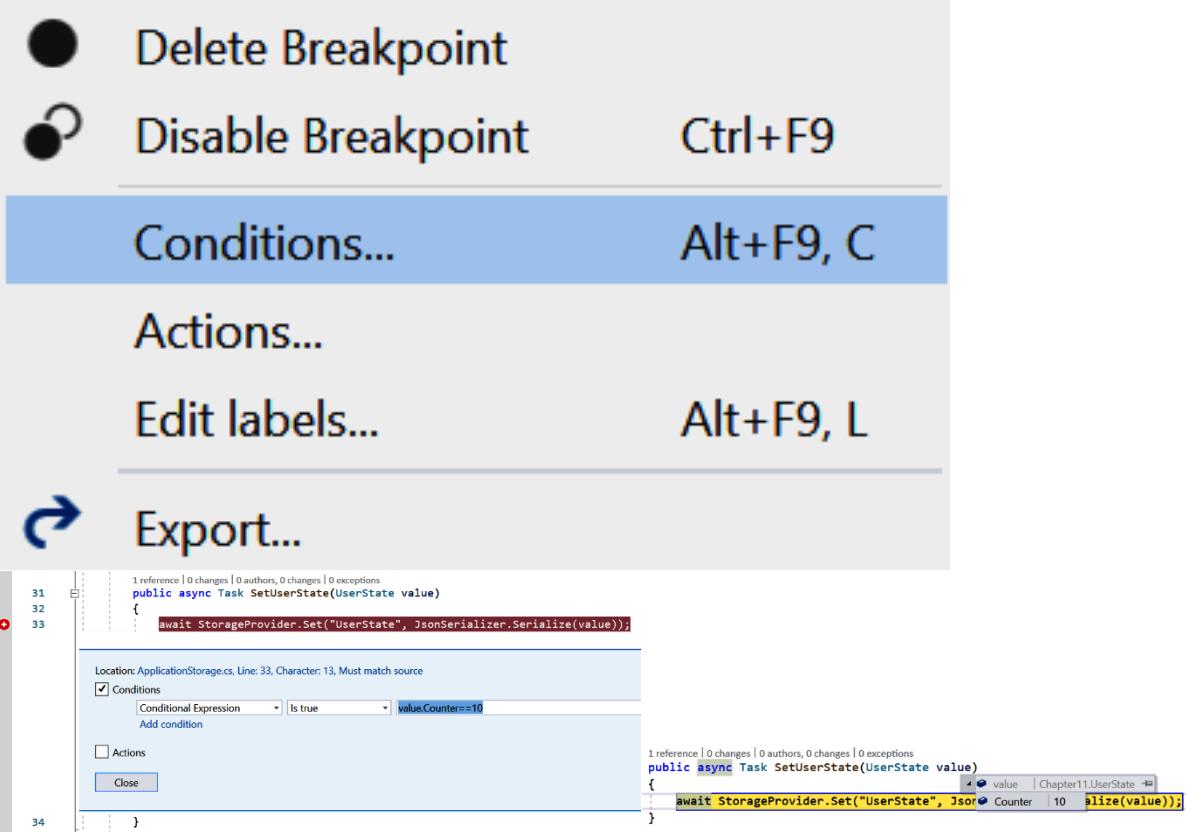
Export DataTips ...

Import DataTips ...

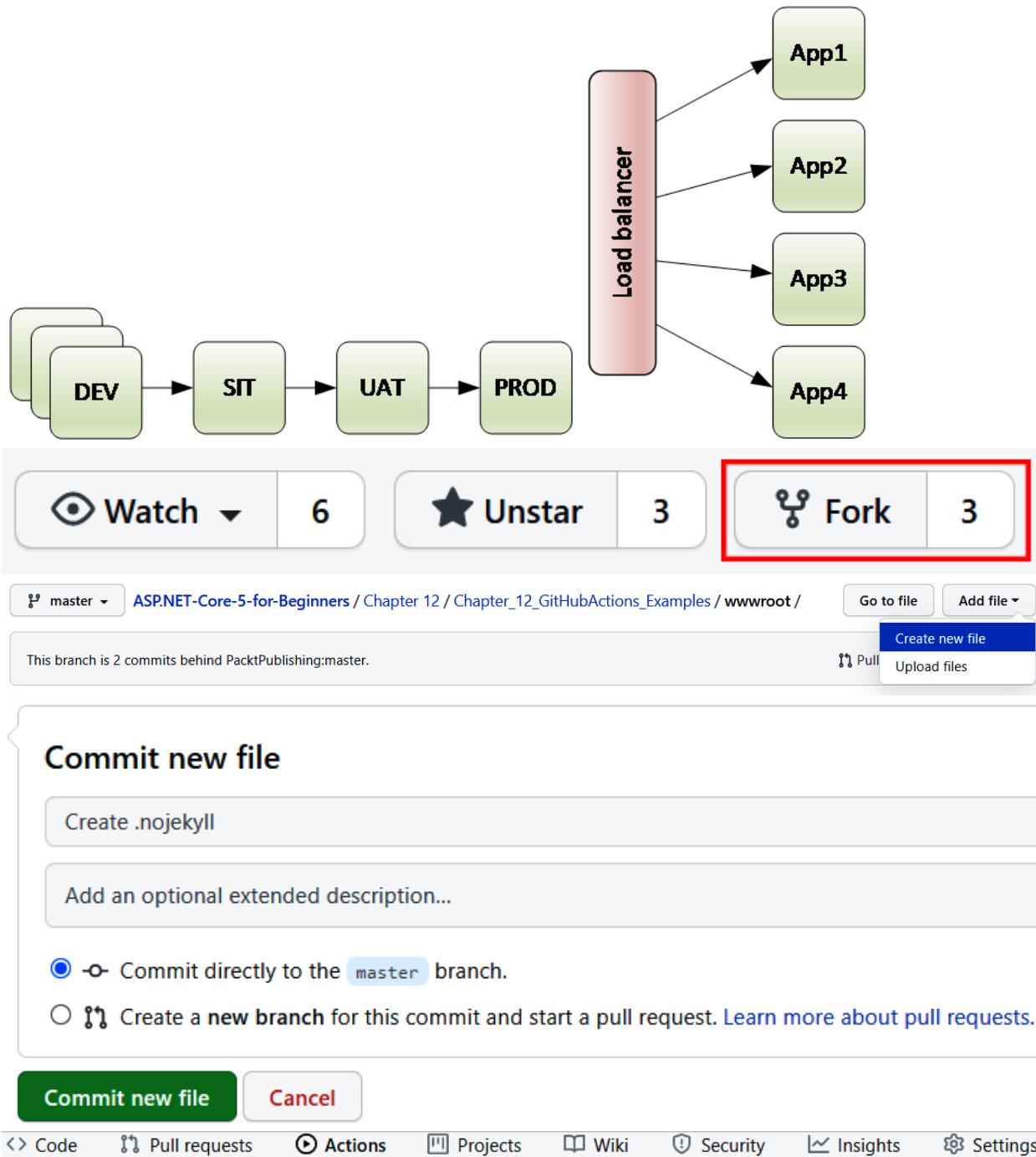
Save Dump As...

⚙️ Options...

🔧 Chapter11 Debug Properties



Chapter 12: Integrating with CI/CD



Get started with GitHub Actions

Build, test, and deploy your code. Make code reviews, branch management, and issue triaging work the way you want. Select a workflow template to get started.

Skip this and [set up a workflow yourself →](#)

The screenshot shows the GitHub Actions interface. At the top, there's a navigation bar with links for Code, Pull requests, Actions (which is highlighted), Projects, Wiki, Security, Insights, and Settings. Below the navigation bar, the URL is shown as `ASP.NET-Core-5-for-Beginners / Chapter 12 / Chapter_12_GitHubActions_Examples / wwwroot /`. The page displays a raw file preview with tabs for Raw and Blame, and icons for preview, edit, and delete. Below the preview, there are buttons for Edit file and Preview changes. The raw file content is:

```
1  <!DOCTYPE html>
2  <html>
3
4  <head>
5      <meta charset="utf-8" />
6      <meta name="viewport" content="width=device-width, initial-scale=1.0, maximum-scale=1.0, user-scalable=no" />
7      <title>My GitHub WASM</title>
8      <base href="/" />
9      <link href="css/bootstrap/bootstrap.min.css" rel="stylesheet" />
10     <link href="css/app.css" rel="stylesheet" />
11  </head>
```

Below the raw file, there's another navigation bar with links for Code, Pull requests, Actions (highlighted), Projects, Wiki, Security, Insights, and Settings. Under the Actions tab, there's a section for Workflows with a New workflow button and a link to All workflows. A specific workflow named "Build and Deploy ASP .NET Core..." is listed. The main content area shows a list of 4 results for the "Update index.html" workflow, with columns for Event, Status, Branch, Actor, and a more button. At the bottom, there's a detailed view of the "Update index.html" workflow, showing its configuration and a successful run. The run details include the workflow file, steps (build and deploy), and artifacts (myWASM). The bottom navigation bar includes links for Code, Pull requests, Actions (highlighted), Projects, Wiki, Security, Insights, and Settings.

GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

Source

GitHub Pages is currently disabled. Select a source below to enable GitHub Pages for this repository. [Learn more.](#)

[None ▾](#)

[Save](#)

Theme Chooser

Select a theme to publish your site with a Jekyll theme using the `gh-pages` branch. [Learn more.](#)

[Choose a theme](#)

Source

GitHub Pages is currently disabled. Select a source below to enable

 [Branch: pages ▾](#)

 / (root) ▾

[Save](#)

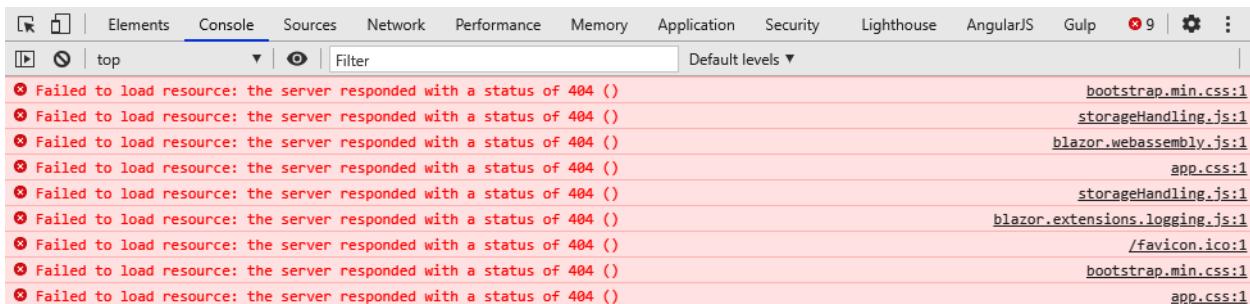
GitHub Pages

GitHub Pages is designed to host your personal, organization, or project pages from a GitHub repository.

Your site is ready to be published at <https://chilberto.github.io/ASP.NET-Core-5-for-Beginners/>.

Loading...

An unhandled error has occurred. [Reload](#) 



Screenshot of the Network tab in the Chrome DevTools Network panel. The request for "bootstrap.min.css" failed with a 404 error.

Name	Headers	Preview	Response	Initiator	Timing
ASP.NET-Core-5-for-Beginners/					
bootstrap.min.css					
app.css					
blazor.webassembly.js					
storageHandling.js					
blazor.extensions.logging.js					

General

Request URL: https://chilberto.github.io/css/bootstrap/bootstrap.min.css
Request Method: GET
Status Code: 404
Remote Address: 185.199.111.153:443
Referrer Policy: strict-origin-when-cross-origin

26 lines (22 sloc) | 781 Bytes

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5   <meta charset="utf-8" />
6   <meta name="viewport" content="width=device-width, initial-scale=1.0, maximum-scale=1.0, user-scalable=no" />
7   <title>My GitHub WASM</title>
8   <base href="/" />
9   <link href="css/bootstrap/bootstrap.min.css" rel="stylesheet" />
10  <link href="css/app.css" rel="stylesheet" />
11 </head>
```

Chapter12

Home Counter Fetch data

Hello, world!

Welcome to your new app.

How is Blazor working for you? Please take our [brief survey](#) and tell us what you think.

Elements Console Sources Network Performance Memory Application Security Lighthouse AngularJS Gulp

Preserve log Disable cache

Filter Hide data URLs All XHR JS CSS Img Media Font Doc WS Manifest Other Has blocked cookies Blocked Requests

10 ms 20 ms 30 ms 40 ms 50 ms 60 ms 70 ms 80 ms

Code Pull requests Actions Projects Wiki Security Insights Settings

master ASP.NET-Core-5-for-Beginners / Chapter 12 / Chapter_12_GitHubActions_Examples / Chapter12.csproj

```
<PropertyGroup>
  <TargetFramework>net5.0</TargetFramework>
</PropertyGroup>
```

Code Pull requests Actions Projects Wiki Security Insights Settings

Update Chapter12.csproj

master · 6f0de82

Build and Deploy ASP .NET Core C... 1
on: push

build

failed 1 minute ago in 24s

> Set up job

> Run actions/checkout@v2

> Run actions/setup-dotnet@v1

> **Publish app**

> Save artifacts

> Post Run actions/checkout@v2

> Complete job

This screenshot shows the GitHub Actions interface for a repository named 'Update Chapter12.csproj'. The 'Actions' tab is selected. A single workflow named 'Build and Deploy ASP .NET Core C...' is listed, triggered by a push to the 'master' branch. The workflow has one job named 'build'. The build status is 'failed' 1 minute ago in 24s. The job steps are: 'Set up job' (success), 'Run actions/checkout@v2' (success), 'Run actions/setup-dotnet@v1' (success), '**Publish app**' (failure, indicated by a red 'x'), 'Save artifacts' (skipped, indicated by a grey circle), 'Post Run actions/checkout@v2' (success), and 'Complete job' (success). The 'build' step is highlighted with a blue bar at the top.

Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Actions

Secrets

```
33 /home/runn.../ASP.NET-Core-5-for-Beginne  
Microsoft.AspNetCore.Components.WebAssembly  
supports: net5.0 (.NETCoreApp, Version=v5.0)  
34 Failed to restore /home/runn.../ASP.NET...  
35 Error: Process completed with exit code 1.
```

Moderation settings

Secrets

[New repository secret](#)

Secrets are environment variables that are **encrypted**. Anyone with **collaborator** access to this repository can use these secrets for Actions.

Secrets are not passed to workflows that are triggered by a pull request from a fork. [Learn more](#).

 PROD_DATABASE_KEY	Updated 2 minutes ago	Update	Remove
 QA_DATABASE_KEY	Updated 1 minute ago	Update	Remove
 SIT_DATABASE_KEY	Updated 1 minute ago	Update	Remove

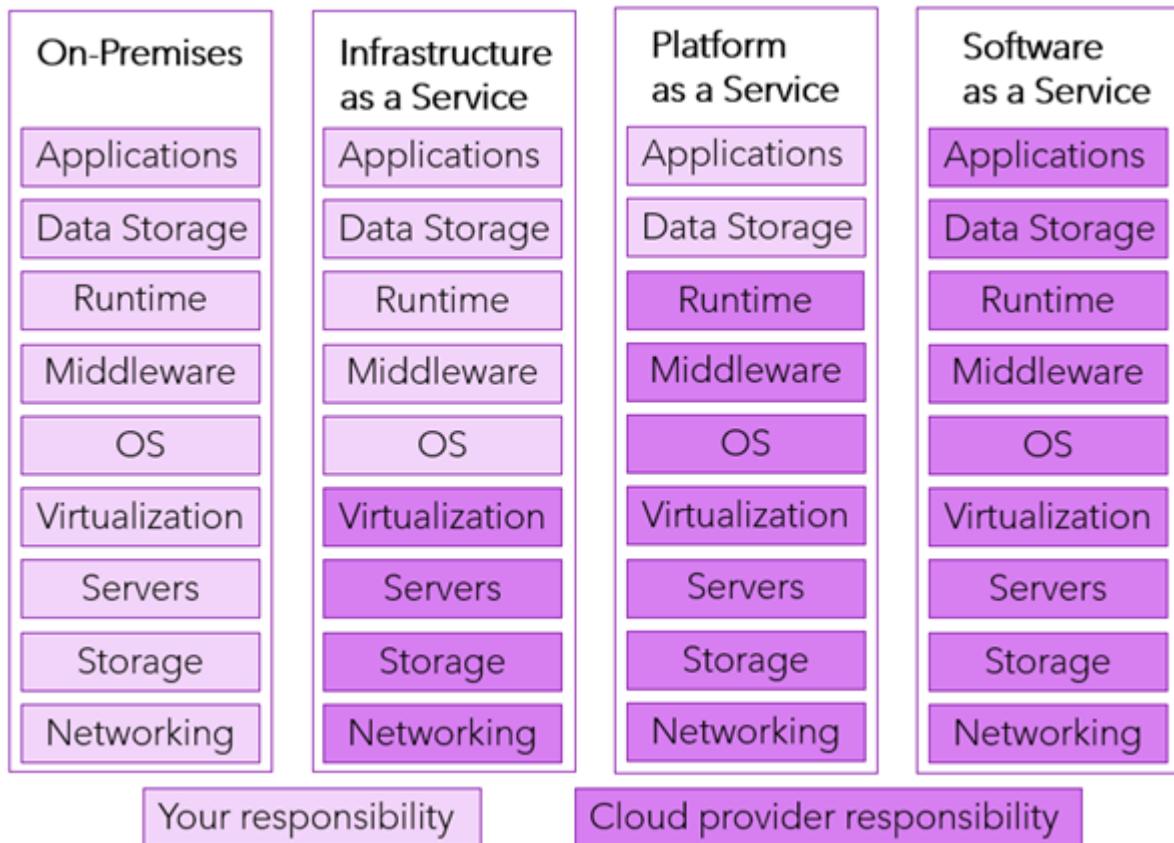
 chilberto	Update Chapter12.csproj	 6f0de82	2 days ago	 40 commits
 .github/workflows	Update main.yml		2 days ago	
 Chapter 03/Chapter_03_DL_Examples	[FET] Add new sample codes		4 months ago	
 Chapter 04/Chapter_04_RazorViewEn...	[RFT] Minor change to variable naming		4 months ago	

 master [ASP.NET-Core-5-for-Beginners](#) / [.github](#) / [workflows](#) / [Go to file](#) [Add file](#)

This branch is 15 commits ahead, 2 commits behind PacktPublishing:master. [Pull request](#) [Compare](#)

 chilberto	Update main.yml	18b4e77	2 days ago	 History
...				
 main.yml	Update main.yml		2 days ago	

Chapter 13: Developing Cloud-Native Apps



On-premises	Cloud
Monolithic, centralized	Microservices, decentralized
Designed for predictable scalability	Designed for elastic/dynamic scalability
Relational databases	Polyglot data/storage technologies
High data integrity/consistency (ACID)	Low data integrity/eventual consistency
Serial and synchronous processing	Parallel and asynchronous processing
Designed to avoid failure. Important metric: Mean Time Between Failures (MTBF)	Designed to expect failure. Important metric: Mean Time To Resolve (MTTR)
Few and large updates	Frequent but small updates
Manual administration	Automated administration
"Snowflake" servers (pets)	Idempotent infrastructure (cattle)

	Name	Data Type	Allow Nulls	Default
1	Id	int	<input type="checkbox"/>	
	FirstName	varchar(50)	<input checked="" type="checkbox"/>	
	LastName	varchar(50)	<input checked="" type="checkbox"/>	
	Address	varchar(50)	<input checked="" type="checkbox"/>	
	ZipCode	varchar(10)	<input checked="" type="checkbox"/>	
	State	nchar(2)	<input checked="" type="checkbox"/>	

Basics Monitoring Tags Review + create

Summary

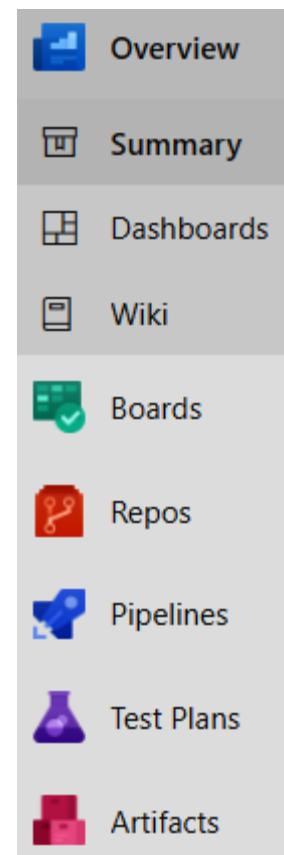


Web App
by Microsoft

Details

Subscription

Resource Group	foo
Name	foobook
Publish	Code
Runtime stack	.NET Core 3.1 (LTS)



App Service Plan (New)

Name	ASP-foo-9baf
Operating System	Windows
Region	Central US
SKU	Standard
Size	Small
ACU	100 total ACU
Memory	1.75 GB memory

Monitoring (New)

Application Insights	Enabled
Name	foobook
Region	Central US



.NET Desktop

Build and test a .NET or Windows classic desktop solution.



Android

Build, test, sign, and align an Android APK.



ASP.NET

Build and test an ASP.NET web application.



Azure Web App for ASP.NET

Build, package, test, and deploy an ASP.NET Azure Web App.



Docker container

Build a Docker image and push it to a container registry.



Maven

Build and test a Java project with Apache Maven.



Python package

Create and test a Python package on multiple Python versions.



Xcode

Build, test, archive, or package an Xcode workspace on macOS.

❖ Infrastructure / azure-pipelines.yml *

```
1  # Starter pipeline
2  # Start with a minimal pipeline that you can customize to build and deploy your code.
3  # Add steps that build, run tests, deploy, and more:
4  # https://aka.ms/yaml
5
6  trigger:
7    - master
8
9  pool:
10   vmImage: 'ubuntu-latest'
11
12 steps:
13   - script: echo Hello, world!
14     displayName: 'Run a one-line script'
15
16   - script: |
17     echo Add other tasks to build, test, and deploy your project.
18     echo See https://aka.ms/yaml
19     displayName: 'Run a multi-line script'
20
```



Azure App Service deployment

Deploy your application to Azure App Service. Choose from Web App on Windows, Linux, containers, Function Apps, or WebJobs.



Deploy a Java app to Azure App Service

Deploy a Java application to an Azure Web App.



Deploy a Node.js app to Azure App Service

Deploy a Node.js application to an Azure Web App.



Deploy a PHP app to Azure App Service and Azure Database for MySQL

Deploy a PHP application to an Azure Web App and database to Azure Database for MySQL.



Deploy a Python app to Azure App Service and Azure database for MySQL

Deploy a Python Django, Bottle, or Flask application to an Azure Web App and database to Azure Database for MySQL.



Deploy to a Kubernetes cluster

Deploy, configure, update your containerized applications to a Kubernetes cluster.

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below.

[Learn more about Azure storage accounts](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *	<input type="text" value="AH-MSDN"/>
Resource group *	<input type="text" value="foo"/> Create new

Instance details

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

Storage account name * ⓘ	<input type="text" value="chapter13storage"/> 
Location *	<input type="text" value="(US) Central US"/>
Performance ⓘ	<input checked="" type="radio"/> Standard <input type="radio"/> Premium
Account kind ⓘ	<input type="text" value="StorageV2 (general purpose v2)"/>
Replication *	<input type="text" value="Locally-redundant storage (LRS)"/>

chapter13storage

Storage account

Search (Ctrl+ /)

 Overview

 Activity log

 Tags

 Diagnose and solve problems

 Access Control (IAM)

 Data transfer

 Events

 Storage Explorer (preview)

Monitoring

 Alerts

 Metrics

 Logs

 Health check (Preview)

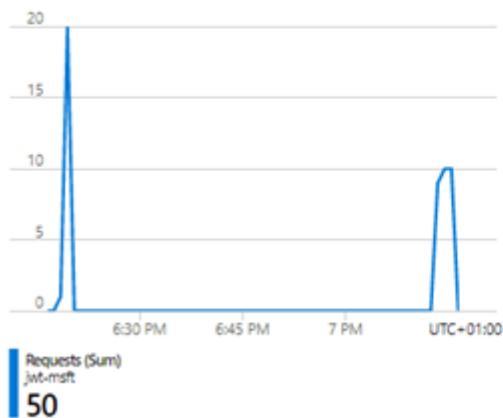
 Diagnostic settings (preview)

 App Service logs

 Log stream

 Process explorer

Requests



Response Time

