

Course: **dotnet core**

8/2022



Who am I



AGENDA DAY 1

- .NET core overview
- .NET core tools
- .NET Core SDK
- Download and install on windows and Linux and docker
- CLI
- .NET standard
- Work with visual studio
- Solution Tree
- NuGet package
- Dependency Injection

.NET 20 YEARS

Free. Cross-platform. Open source.
**A developer platform for building all
your apps.**

[Get Started](#)[Download](#)

Supported on Windows, Linux, and macOS

Explore .NET



Web

Build web apps and services for Windows, Linux, macOS, and Docker.



Mobile

Use a single codebase to build native mobile apps for iOS, Android, and Windows.



Desktop

Create beautiful and compelling desktop apps for Windows and macOS.



Microservices

Create independently deployable microservices that run on Docker containers.



Cloud

Consume existing cloud services, or create and deploy your own.



Machine Learning

Add vision algorithms, speech processing, predictive models, and more to your apps.



Game Development

Develop 2D and 3D games for the most popular desktops, phones, and consoles.



Internet of Things

Make IoT apps, with native support for the Raspberry Pi and other single-board computers.

DOTNET CORE



Cross Platform



Open Source

```
1 var names = new[]
2 {
3     "Ana",
4     "Felipe",
5     "Emillia"
6 };
7
8 foreach (var name in names)
9 {
10     Console.WriteLine($"Hello {name}");
11 }
```

C#

```
let names = [ "Ana"; "Felipe"; "Emillia" ]

for name in names do
    printfn $"Hello {name}"
```

F#

```
Dim names As New List(Of String)({
    "Ana",
    "Felipe",
    "Emillia"
})

For Each name In names
    Console.WriteLine($"Hello {name}")
Next
```

Visual Basic

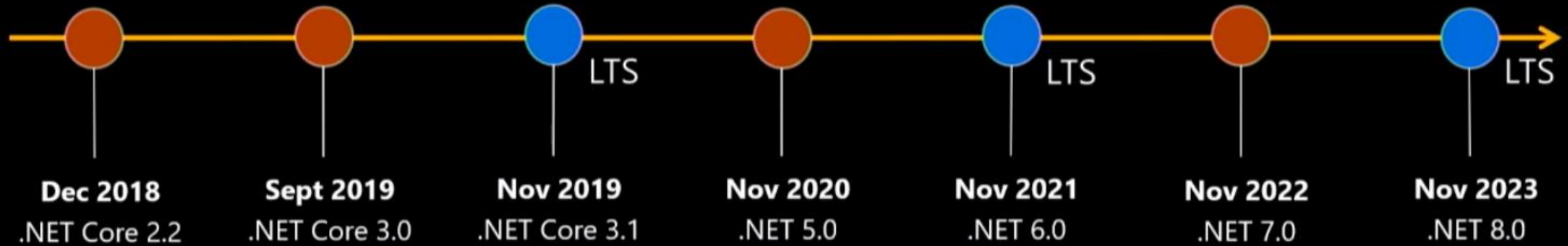
Compatible



Side by Side

<https://github.com/dotnet>

Runtime Support Policy <https://aka.ms/dotnet-core-support>



2.1 (until 8/21/2021)

2.2 (until 12/23/2019, 3 months after 3.0)

3.0 (3 months after 3.1)

3.1 (3 years after release/1 year after next)

5.0 (3 mos after next)

6.0 (3 years after release/1 year after next)

.NET Framework 4.8 (Windows support policy)

TOOLS

Single Platform

Cross Platform

SaaS



Github Codespaces



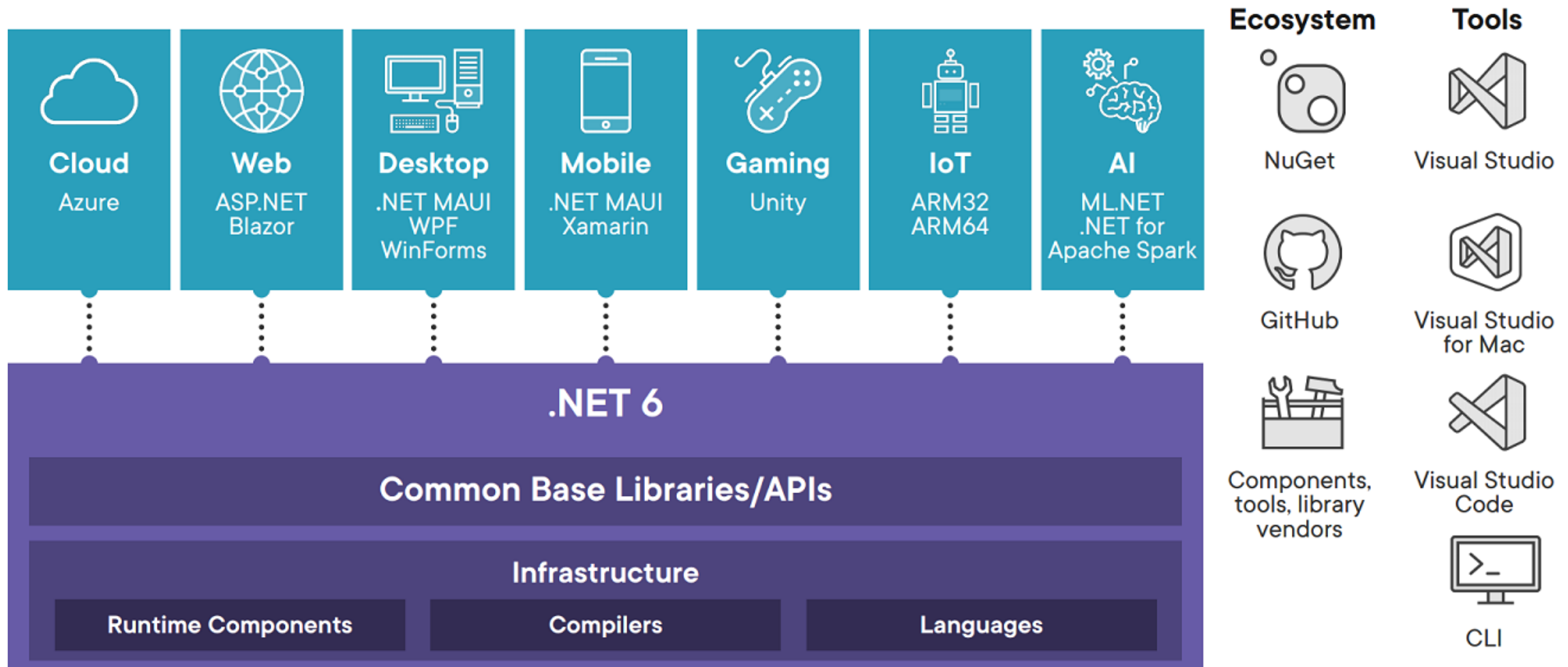
Visual Studio for Mac



```
> dotnet
```

```
Microsoft .NET Core Shared Framework
```

.NET Architecture



GETTING STARTED WITH .NET APPLICATIONS



In short

The SDK is what you use to build and run your application.
The Runtime is to run the application

SDK Components



.NET CLI



.NET driver



Roslyn and F# compilers



MSBuild build engine



.NET runtime



Runtime libraries

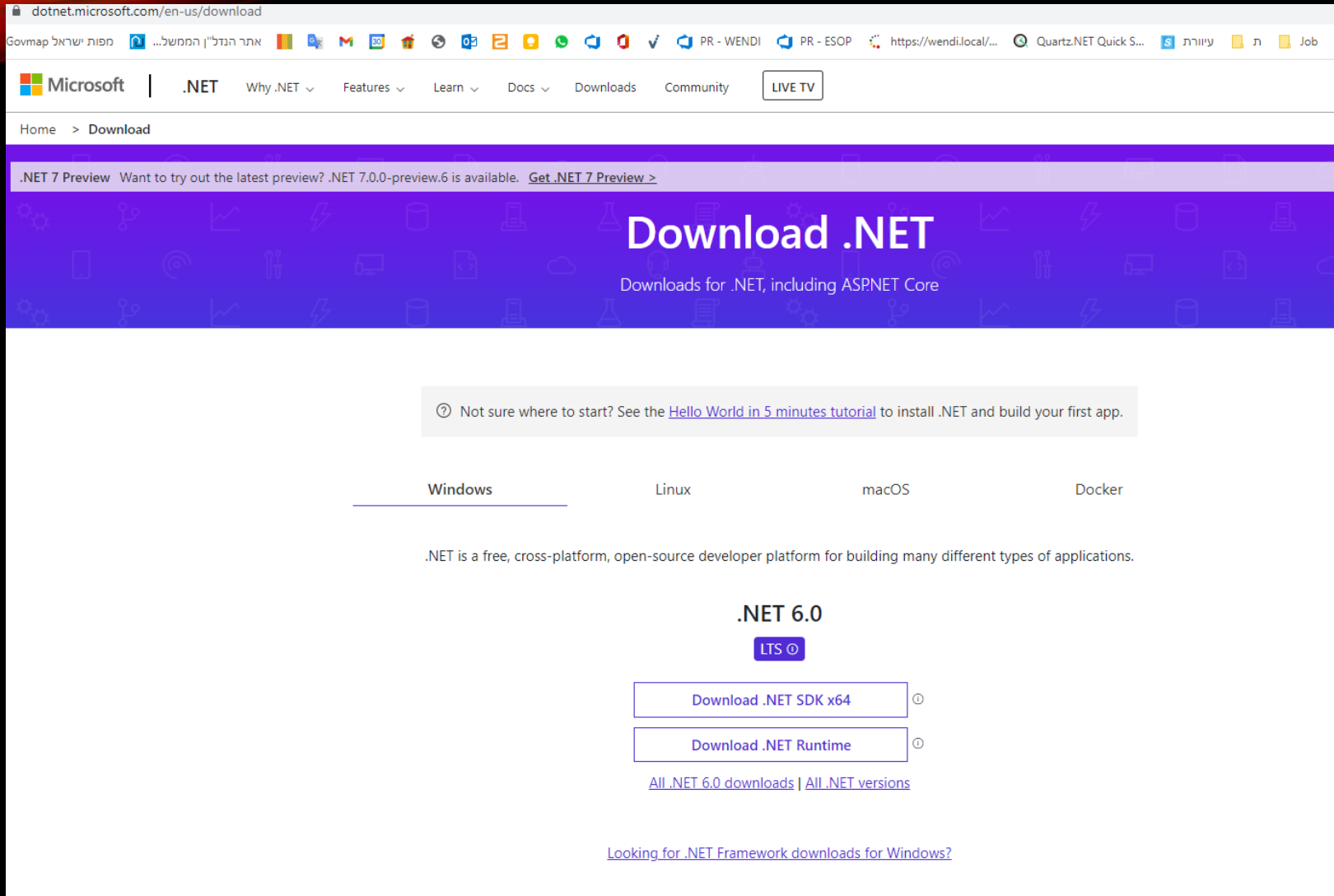


ASP.NET Core runtime



Desktop runtime

DOWNLOAD AND INSTALL



The screenshot shows the .NET download page on the Microsoft website. The browser's address bar displays 'dotnet.microsoft.com/en-us/download'. The page features a navigation bar with the Microsoft logo, '.NET', and links for 'Why .NET', 'Features', 'Learn', 'Docs', 'Downloads', 'Community', and a 'LIVE TV' button. Below the navigation bar, a breadcrumb trail shows 'Home > Download'. A purple banner at the top of the main content area contains the text '.NET 7 Preview' and a link to 'Get .NET 7 Preview >'. The main heading 'Download .NET' is prominently displayed, followed by the subtitle 'Downloads for .NET, including ASP.NET Core'. A helpful tip box suggests users see the 'Hello World in 5 minutes tutorial' if they are unsure where to start. Below this, there are tabs for 'Windows', 'Linux', 'macOS', and 'Docker', with 'Windows' currently selected. A paragraph states that .NET is a free, cross-platform, open-source developer platform. The section for '.NET 6.0' is highlighted, featuring an 'LTS' badge and two download buttons: 'Download .NET SDK x64' and 'Download .NET Runtime'. At the bottom of this section, there are links for 'All .NET 6.0 downloads' and 'All .NET versions'. A final link at the bottom of the page points to 'Looking for .NET Framework downloads for Windows?'.

dotnet.microsoft.com/en-us/download

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Home > Download

.NET 7 Preview Want to try out the latest preview? .NET 7.0.0-preview.6 is available. [Get .NET 7 Preview >](#)

Download .NET

Downloads for .NET, including ASP.NET Core

Not sure where to start? See the [Hello World in 5 minutes tutorial](#) to install .NET and build your first app.

Windows Linux macOS Docker

.NET is a free, cross-platform, open-source developer platform for building many different types of applications.

.NET 6.0

LTS

Download .NET SDK x64

Download .NET Runtime

[All .NET 6.0 downloads](#) | [All .NET versions](#)

[Looking for .NET Framework downloads for Windows?](#)

<https://dotnet.microsoft.com/download>

<https://github.com/dotnet>

CLI

- Dotnet
 - dotnet --version
 - dotnet --list-sdks
 - Dotnet --help
 - Dotnet new
-
- Dotnet new console -o console_demo
 - Dotnet new wpf -o wpf_demo
 - Dotnet new wepapp -o web_app
 - Dotnet build
 - Dotnet publish

INSTALL ON LINUX

- `sudo rpm -Uvh https://packages.microsoft.com/config/rhel/7/packages-microsoft-prod.rpm`
- `sudo yum makecache`
- `sudo yum install dotnet-sdk-6.0`

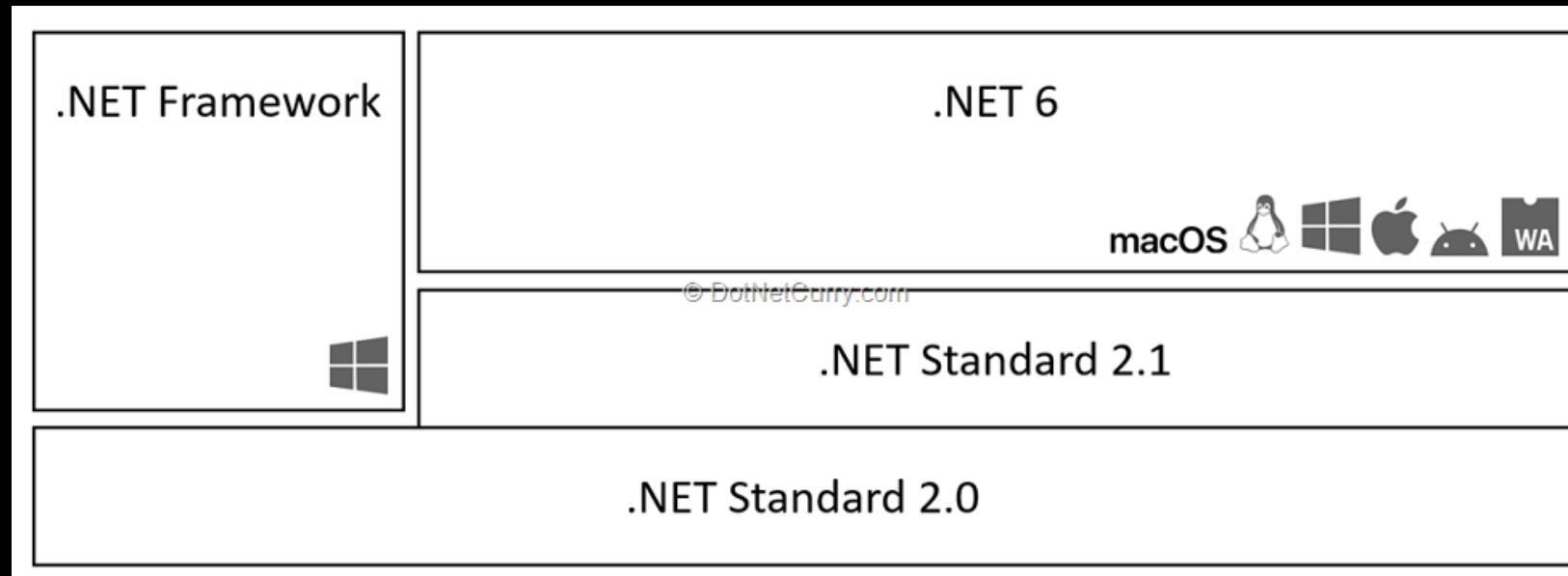
INSTALL ON DOCKER

- `docker run --rm mcr.microsoft.com/dotnet/core/samples`
- `docker run -it --rm -p 8000:80 --name aspnetcore_sample mcr.microsoft.com/dotnet/core/samples:aspnetapp`

תרגיל

1. בדוק איזה גרסת NET CORE מותקן אצלך.
2. התקן גרסת net core sdk. אחרונה
3. כתוב תוכנית:
 1. שמבקשת את השם שלך כקלט ומדפיסה אותו על המסך.
 2. צור את הפרויקט Console דרך CLI
 3. שם התוכנית my_user_name
 4. הרץ את התרגיל דרך CLI
4. צור פרויקט מסוג "ASP.NET Core Web API" דרך CLI בשם "demo_api"
 1. הרץ את הפרויקט דרך CLI
 2. הדר את הקוד דרך CLI
 3. הכן תיקיית הפצה דרך CLI
 4. הרץ דרך CLI גרסת הפצה

.NET STANDARD CONTEXT



.NET STANDARD

- .NET Standard is also Open Source!
- Anybody can propose API additions
- The review board approves the API
- <https://docs.microsoft.com/en-us/dotnet/standard/net-standard>

.NET STANDARD 2.0

1.0 1.1 1.2 1.3 1.4 1.5 1.6 **2.0** 2.1

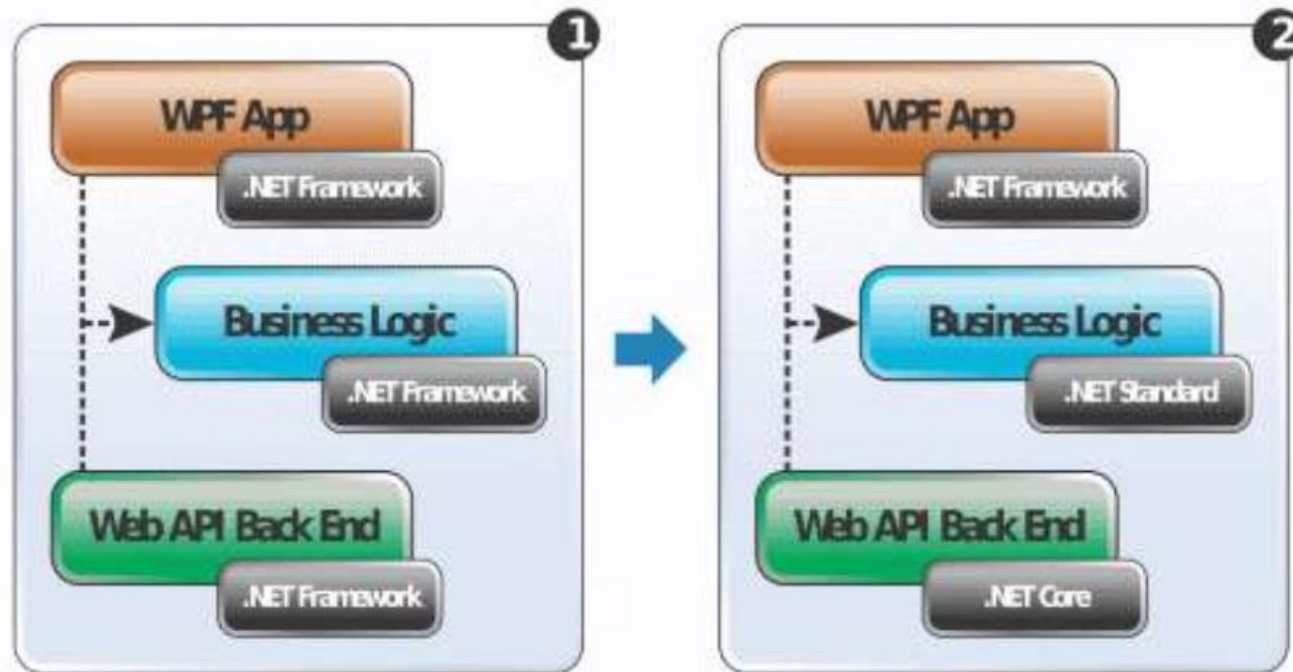
.NET Standard 2.0 has 32,638 of the 37,118 available APIs.

.NET implementation	Version support
.NET and .NET Core	2.0, 2.1, 2.2, 3.0, 3.1, 5.0, 6.0
.NET Framework ¹	4.6.1 ² , 4.6.2, 4.7, 4.7.1, 4.7.2, 4.8
Mono	5.4, 6.4
Xamarin.iOS	10.14, 12.16
Xamarin.Mac	3.8, 5.16
Xamarin.Android	8.0, 10.0
Universal Windows Platform	10.0.16299, TBD
Unity	2018.1

.NET STANDARD 2.1

1.0	1.1	1.2	1.3	1.4	1.5	1.6	2.0	2.1
.NET Standard 2.1 has 37,118 of the 37,118 available APIs.								
.NET implementation				Version support				
.NET and .NET Core				3.0, 3.1, 5.0, 6.0				
.NET Framework ¹				N/A ²				
Mono				6.4				
Xamarin.iOS				12.16				
Xamarin.Mac				5.16				
Xamarin.Android				10.0				
Universal Windows Platform				TBD				
Unity				2021.2				

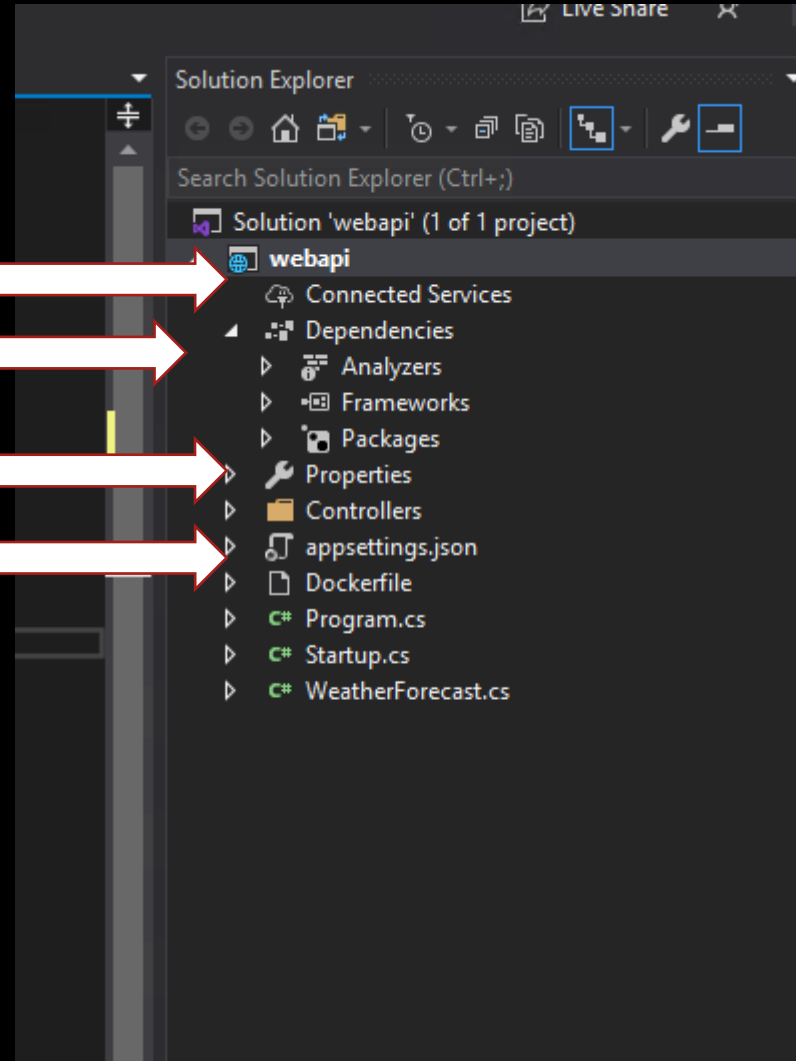
Handling Shared Code When Targeting Multiple .NET Implementations



SOLUTION TREE

Legacy web service/ WCF
NuGet/ project ref / npm /dll's / other

Debug profile running
settings

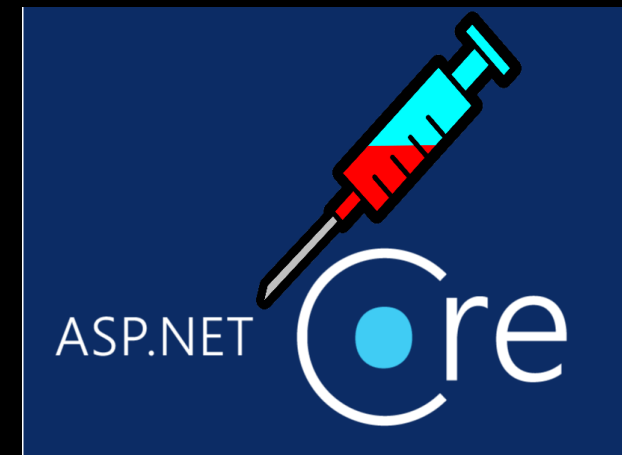
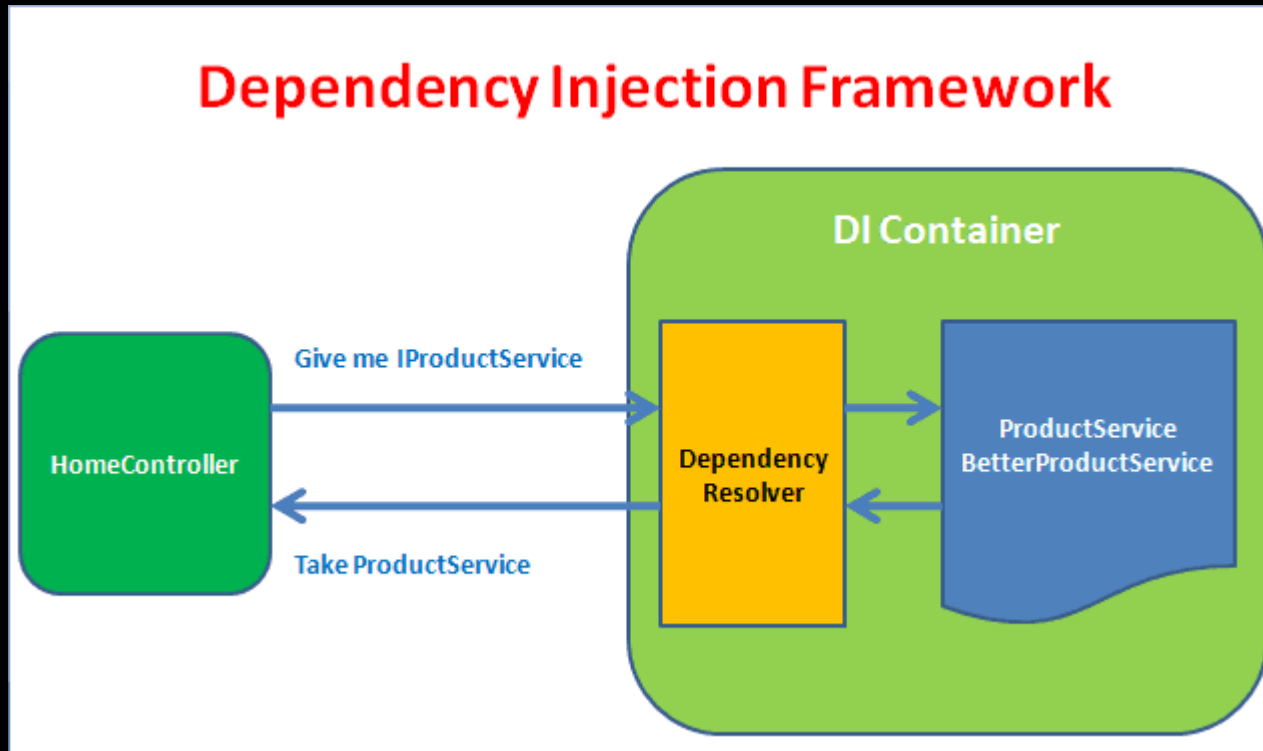


NUGET PACKAGE

- NuGet package manager
- Project *.csproj file
- CLI: `dotnet add package`
- PM> `Install-Package`

DEPENDENCY INJECTION

- Inversion of Control (IOC)
- Manages the lifetime of objects



DEPENDENCY INJECTION LIFE TIME

Service Lifetimes

Transient

Created each time
they are requested

Scoped

Created once per
request

Singleton

Created the first
time they are
requested

DEMO



תרגיל

1. צור פרויקט Console דרך visual studio בשם Exercise2
2. צור מחלקה בשם StudentRepository
 - צור פונקציה שמחזירה שמות סטודנטים לפי שם בית ספר
3. צור מחלקה בשם SchoolService
 - צור פונקציה שמקבלת מספר בית ספר ומחזירה את שמות הסטודנטים.
4. הדפס את כל התלמידים בבית ספר 1 התוצאה.
5. השתמש ב IOC

School ID	Student name
1	Moshe Levi
1	Avi Perez
1	Galit Mizrahi
2	Ronit Chen
2	Nivi Shemesh