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Jak migrovat za pochodu .NET Framework na .NET 5

Out with the old, in with the new
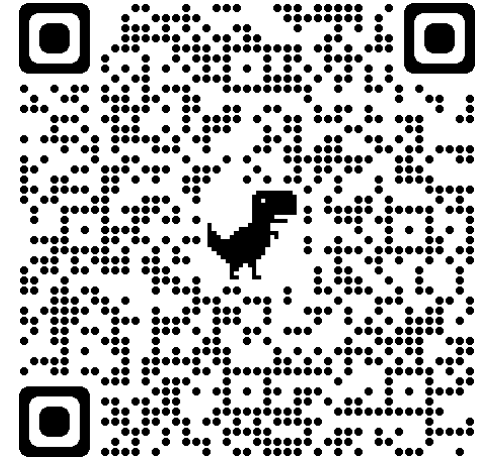
Multitargeting .NET applications

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Čo sa nedozvieme

- Zoznámenie s .NET 5 / .NET core
- Rozdiely medzi .NET Framework (4.x) a .NET 5
- Návod ako prepísať aplikáciu z .NET Frameworku do .NET 5
  - https://docs.microsoft.com/en-us/aspnet/core/migration/proper-to-2x/?view=aspnetcore-5.0

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Čo sa dozvieme

Ako prepisovať kód a neblokovať vývoj

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Blokovať vývoj

- Nové featury =
- Prepis kódu ↑   Nové featury ↓

- Udržovanie mŕtvej technológie
  - Support
  - Manpower

Blokovať vývoj

- Nové featury =
- Prepis kódu ↑   Nové featury ↓

- Udržovanie mŕtvej technológie → • Náklady na udržovanie =
  - Support
  - Manpower

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Story time

- Xperience - framework
- Podpora vývoja na WebForms 🪦 a MVC 5
- Zákazníci požadujú podporu .NET Core (.NET 5)
- Ako udržať kompatiblitu pre MVC 5 a .NET Core?

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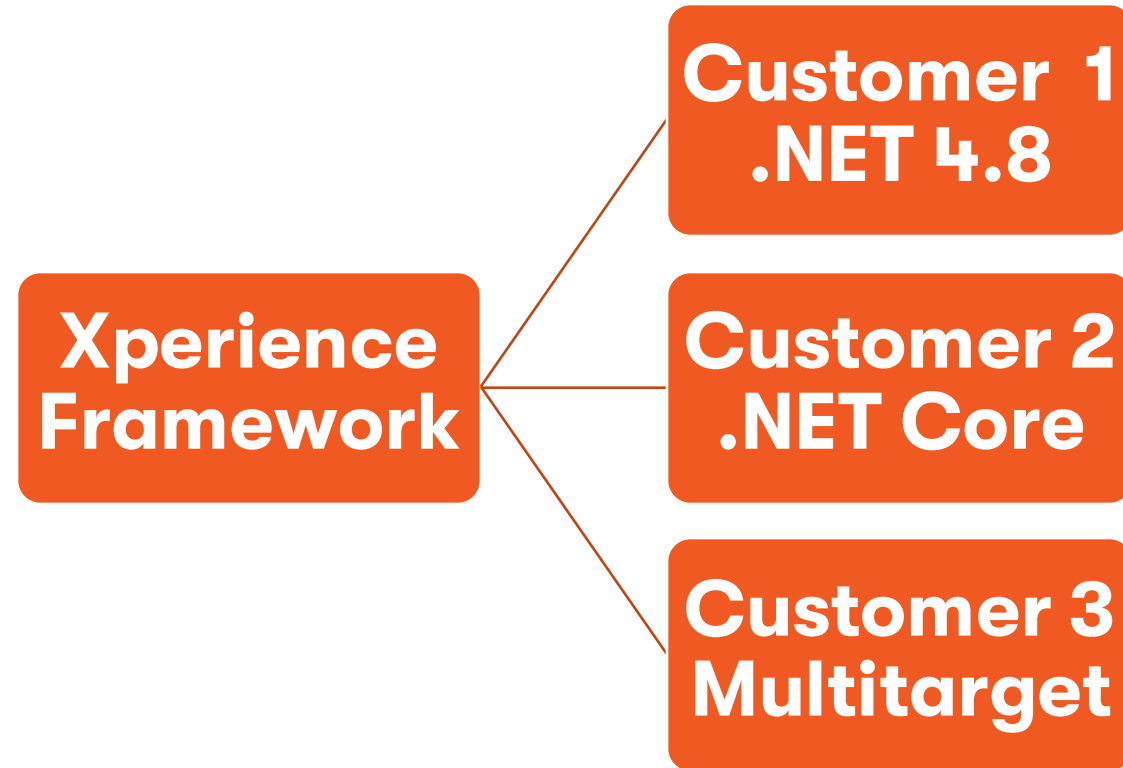
Story time
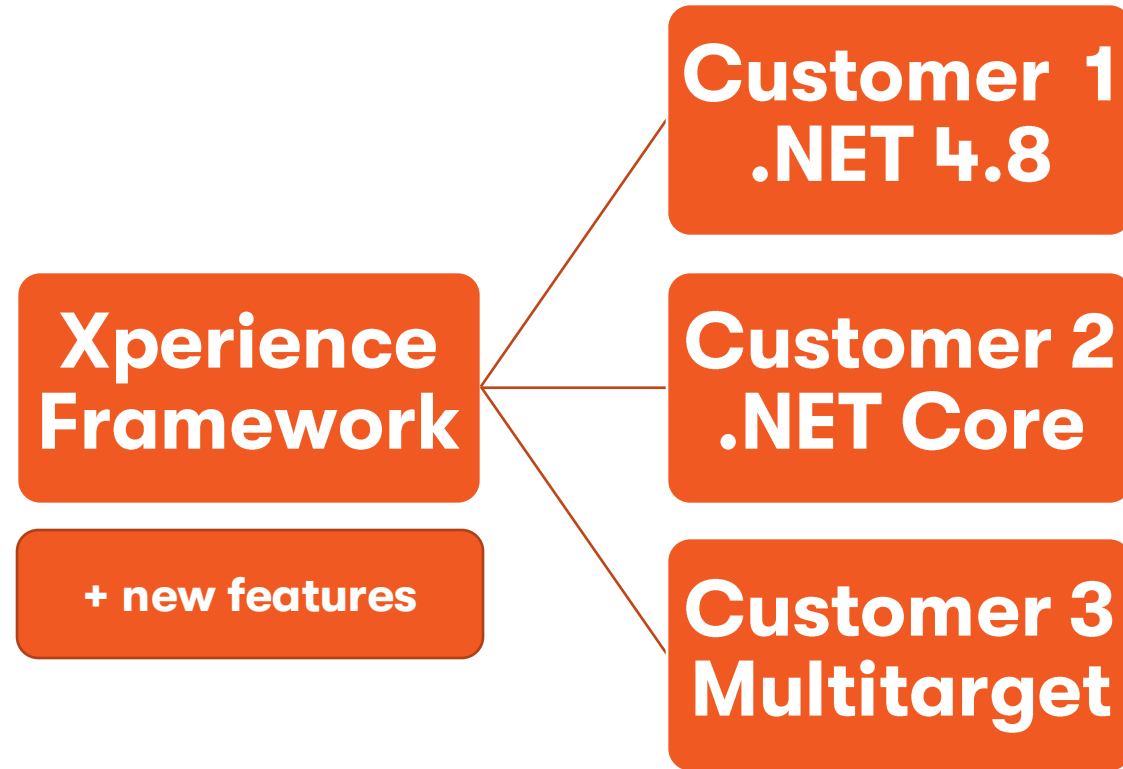
Story time

Story time
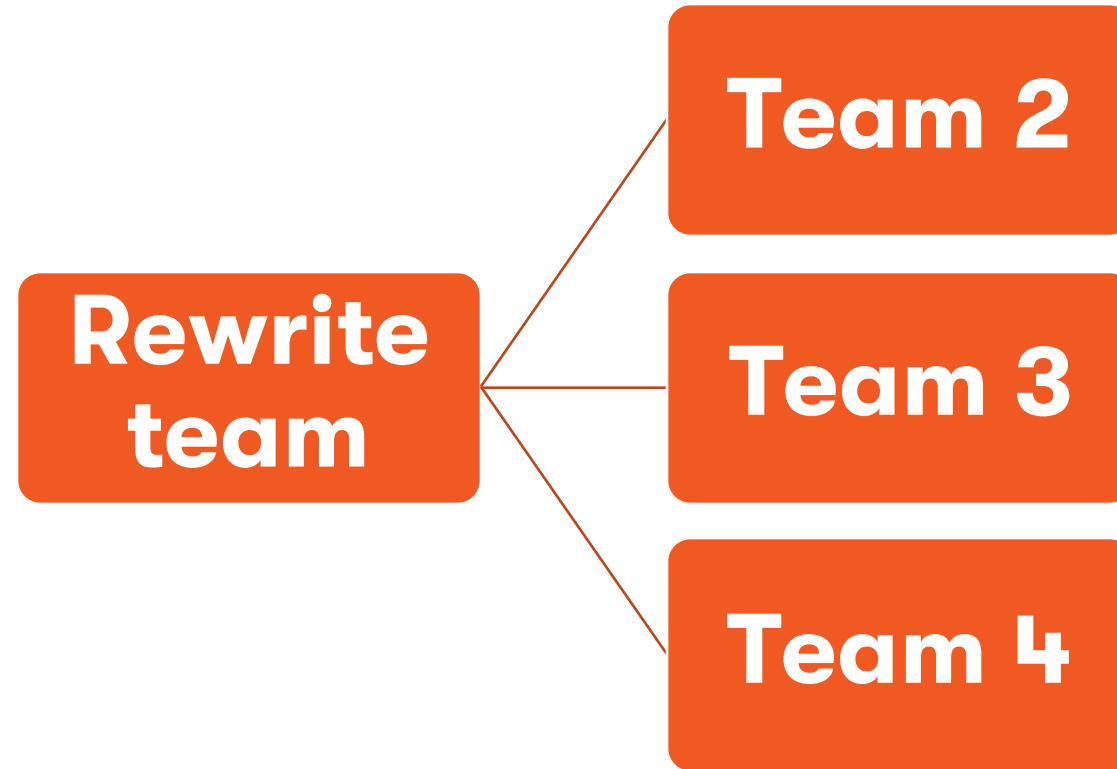
Bottom up

- Zostaviť si graf závislostí knižníc
- Konvertovať zdola nahor

- VS extension .NET Portability analyzer
  - https://docs.microsoft.com/en-us/dotnet/standard/analyzers/portability-analyzer

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.csproj a multitargeting

- Zjednudušené, prehladnejšie, ľahšie premietanie zmien

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

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

  <ItemGroup>
    <Folder Include="wwwroot\" />
  </ItemGroup>

  <ItemGroup>
    <ProjectReference Include="..\Resources\Resources.csproj" />
    <ProjectReference Include="..\Cookies\Cookies.csproj" />
    <ProjectReference Include="..\Protection\Protection.csproj" />
    <ProjectReference Include="..\MvcUtils\MvcUtils.csproj" />
  </ItemGroup>

</Project>
```

.csproj a multitargeting

```xml
<?xml version="1.0" encoding="utf-8"?> <Project ToolsVersion="15.0" DefaultTargets="Build" xmlns="http://schemas.microsoft.com/developer/msbuild/2003"> <Import
Project="..\packages\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.2.0.1\build\net46\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.props"
Condition="Exists('..\packages\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.2.0.1\build\net46\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.props')" /> <Import
Project="$(MSBuildExtensionsPath)\$(MSBuildToolsVersion)\Microsoft.Common.props" Condition="Exists('$(MSBuildExtensionsPath)\$(MSBuildToolsVersion)\Microsoft.Common.props')" /> <PropertyGroup> <Configuration Condition="
'$(Configuration)' == '' ">Debug</Configuration> <Platform Condition=" '$(Platform)' == '' ">AnyCPU</Platform> <ProductVersion> </ProductVersion> <SchemaVersion>2.0</SchemaVersion> <ProjectGuid>{6104C8D7-18E8-4E28-9A1E-
F383E5DD839F}</ProjectGuid> <ProjectTypeGuids>{349c5851-65df-11da-9384-00065b846f21};{fae04ec0-301f-11d3-bf4b-00c04f79efbc}</ProjectTypeGuids> <OutputType>Library</OutputType> <AppDesignerFolder>Properties</AppDesignerFolder>
<RootNamespace>DevMeetup</RootNamespace> <AssemblyName>DevMeetup</AssemblyName> <TargetFrameworkVersion>v4.8</TargetFrameworkVersion> <MvcBuildViews>false</MvcBuildViews> <UseIISExpress>true</UseIISExpress> <Use64BitIISExpress />
<IISExpressSSLPort>44336</IISExpressSSLPort> <IISExpressAnonymousAuthentication /> <IISExpressWindowsAuthentication /> <IISExpressUseClassicPipelineMode /> <UseGlobalApplicationHostFile /> <NuGetPackageImportStamp>
</NuGetPackageImportStamp> </PropertyGroup> <PropertyGroup Condition=" '$(Configuration)|$(Platform)' == 'Debug|AnyCPU' "> <DebugSymbols>true</DebugSymbols> <DebugType>full</DebugType> <Optimize>false</Optimize>
<OutputPath>bin\</OutputPath> <DefineConstants>DEBUG;TRACE</DefineConstants> <ErrorReport>prompt</ErrorReport> <WarningLevel>4</WarningLevel> </PropertyGroup> <PropertyGroup Condition=" '$(Configuration)|$(Platform)' ==
'Release|AnyCPU' "> <DebugSymbols>true</DebugSymbols> <DebugType>pdbonly</DebugType> <Optimize>true</Optimize> <OutputPath>bin\</OutputPath> <DefineConstants>TRACE</DefineConstants> <ErrorReport>prompt</ErrorReport>
<WarningLevel>4</WarningLevel> </PropertyGroup> <ItemGroup> <Reference Include="Microsoft.CSharp" /> <Reference Include="System" /> <Reference Include="System.Data" /> <Reference Include="System.Drawing" /> <Reference
Include="System.Web.DynamicData" /> <Reference Include="System.Web.Entity" /> <Reference Include="System.Web.ApplicationServices" /> <Reference Include="System.ComponentModel.DataAnnotations" /> <Reference Include="System.Core" />
<Reference Include="System.Data.DataSetExtensions" /> <Reference Include="System.Xml.Linq" /> <Reference Include="System.Web" /> <Reference Include="System.Web.Extensions" /> <Reference Include="System.Web.Abstractions" /> <Reference
Include="System.Web.Routing" /> <Reference Include="System.Xml" /> <Reference Include="System.Configuration" /> <Reference Include="System.Web.Services" /> <Reference Include="System.EnterpriseServices" /> <Reference
Include="Microsoft.Web.Infrastructure, Version=1.0.0.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35, processorArchitecture=MSIL"> <Private>True</Private>
<HintPath>..\packages\Microsoft.Web.Infrastructure.1.0.0.0\lib\net40\Microsoft.Web.Infrastructure.dll</HintPath> </Reference> <Reference Include="System.Net.Http"> </Reference> <Reference Include="System.Net.Http.WebRequest">
</Reference> <Reference Include="System.Web.Helpers, Version=3.0.0.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35, processorArchitecture=MSIL"> <Private>True</Private>
<HintPath>..\packages\Microsoft.AspNet.WebPages.3.2.7\lib\net45\System.Web.Helpers.dll</HintPath> </Reference> <Reference Include="System.Web.Mvc, Version=5.2.7.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35,
processorArchitecture=MSIL"> <Private>True</Private> <HintPath>..\packages\Microsoft.AspNet.Mvc.5.2.7\lib\net45\System.Web.Mvc.dll</HintPath> </Reference> <Reference Include="System.Web.Optimization">
<HintPath>..\packages\Microsoft.AspNet.Web.Optimization.1.1.3\lib\net40\System.Web.Optimization.dll</HintPath> </Reference> <Reference Include="System.Web.Razor, Version=3.0.0.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35,
processorArchitecture=MSIL"> <Private>True</Private> <HintPath>..\packages\Microsoft.AspNet.Razor.3.2.7\lib\net45\System.Web.Razor.dll</HintPath> </Reference> <Reference Include="System.Web.WebPages, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=31bf3856ad364e35, processorArchitecture=MSIL"> <Private>True</Private> <HintPath>..\packages\Microsoft.AspNet.WebPages.3.2.7\lib\net45\System.Web.WebPages.dll</HintPath> </Reference> <Reference
Include="System.Web.WebPages.Deployment, Version=3.0.0.0, Culture=neutral, PublicKeyToken=31bf3856ad364e35, processorArchitecture=MSIL"> <Private>True</Private>
<HintPath>..\packages\Microsoft.AspNet.WebPages.3.2.7\lib\net45\System.Web.WebPages.Deployment.dll</HintPath> </Reference> <Reference Include="System.Web.WebPages.Razor, Version=3.0.0.0, Culture=neutral,
PublicKeyToken=31bf3856ad364e35, processorArchitecture=MSIL"> <Private>True</Private> <HintPath>..\packages\Microsoft.AspNet.WebPages.3.2.7\lib\net45\System.Web.WebPages.Razor.dll</HintPath> </Reference> <Reference
Include="Newtonsoft.Json"> <HintPath>..\packages\Newtonsoft.Json.12.0.2\lib\net45\Newtonsoft.Json.dll</HintPath> </Reference> <Reference Include="WebGrease"> <Private>True</Private>
<HintPath>..\packages\WebGrease.1.6.0\lib\WebGrease.dll</HintPath> </Reference> <Reference Include="Antlr3.Runtime"> <Private>True</Private> <HintPath>..\packages\Antlr.3.5.0.2\lib\Antlr3.Runtime.dll</HintPath> </Reference>
</ItemGroup> <ItemGroup> <Reference Include="Microsoft.CodeDom.Providers.DotNetCompilerPlatform">
<HintPath>..\packages\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.2.0.1\lib\net45\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.dll</HintPath> </Reference> </ItemGroup> <ItemGroup> <Compile
Include="App_Start\RouteConfig.cs" /> <Compile Include="Controllers\HomeController.cs" /> <Compile Include="Global.asax.cs"> <DependentUpon>Global.asax</DependentUpon> </Compile> <Compile Include="Properties\AssemblyInfo.cs" />
</ItemGroup> <ItemGroup> <Content Include="Global.asax" /> <Content Include="Web.config" /> <Content Include="Web.Debug.config"> <DependentUpon>Web.config</DependentUpon> </Content> <Content Include="Web.Release.config">
<DependentUpon>Web.config</DependentUpon> </Content> <Content Include="Views\Home\Index.cshtml" /> </ItemGroup> <ItemGroup> <ItemGroup> <None Include="packages.config" /> <Content Include="Views\Web.config"> <Content
Include="Views\Home\FakeAuthEndpoint.cshtml" /> <Content Include="Views\Home\_FrameworkVersion.cshtml" /> </ItemGroup> <ItemGroup> <ProjectReference Include="..\Cookies\Cookies.csproj"> <Project>{46968FC3-B5D8-4D27-9680-
4D52F34C9E98}</Project> <Name>Cookies</Name> </ProjectReference> <ProjectReference Include="..\MvcUtils\MvcUtils.csproj"> <Project>{e9e4959d-b9b7-48f8-a45c-8c8ce6f0fc4f}</Project> <Name>MvcUtils</Name> </ProjectReference>
<ProjectReference Include="..\Protection\Protection.csproj"> <Project>{2E6C89D0-4B51-42EA-9AA2-3C95B45432C0}</Project> <Name>Protection</Name> </ProjectReference> <ProjectReference Include="..\Resources\Resources.csproj">
<Project>{7056BB4D-D042-4BC4-AE5B-2034E0E28FB8}</Project> <Name>Resources</Name> </ProjectReference> </ItemGroup> <PropertyGroup> <VisualStudioVersion Condition="'$(VisualStudioVersion)' == ''">10.0</VisualStudioVersion> <VSToolsPath
Condition="'$(VSToolsPath)' == ''">$(MSBuildExtensionsPath32)\Microsoft\VisualStudio\v$(VisualStudioVersion)</VSToolsPath> </PropertyGroup> <Import Project="$(MSBuildBinPath)\Microsoft.CSharp.targets" /> <Import
Project="$(VSToolsPath)\WebApplications\Microsoft.WebApplication.targets" Condition="'$(VSToolsPath)' != ''" /> <Import
Project="$(MSBuildExtensionsPath32)\Microsoft\VisualStudio\v10.0\WebApplications\Microsoft.WebApplication.targets" Condition="false" /> <Target Name="MvcBuildViews" AfterTargets="AfterBuild" Condition="'$(MvcBuildViews)'=='true'">
<AspNetCompiler VirtualPath="temp" PhysicalPath="$(WebProjectOutputDir)" /> </Target> <ProjectExtensions> <VisualStudio> <FlavorProperties GUID="{349c5851-65df-11da-9384-00065b846f21}"> <WebProjectProperties> <UseIIS>True</UseIIS>
<AutoAssignPort>True</AutoAssignPort> <DevelopmentServerPort>19046</DevelopmentServerPort> <DevelopmentServerVPath>/</DevelopmentServerVPath> <IISUrl>https://localhost:44336/</IISUrl> <NTLMAuthentication>False</NTLMAuthentication>
<UseCustomServer>False</UseCustomServer> <CustomServerUrl> </CustomServerUrl> <SaveServerSettingsInUserFile>False</SaveServerSettingsInUserFile> </WebProjectProperties> </FlavorProperties> </VisualStudio> </ProjectExtensions> <Target
Name="EnsureNuGetPackageBuildImports" BeforeTargets="PrepareForBuild"> <PropertyGroup> <ErrorText>This project references NuGet package(s) that are missing on this computer. Use NuGet Package Restore to download them. For more
information, see http://go.microsoft.com/fwlink/?LinkID=322105. The missing file is {0}.</ErrorText> </PropertyGroup> <Error
Condition="!Exists('..\packages\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.2.0.1\build\net46\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.props')" Text="$([System.String]::Format('$(ErrorText)',
'..\packages\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.2.0.1\build\net46\Microsoft.CodeDom.Providers.DotNetCompilerPlatform.props'))" /> </Target> <!-- To modify your build process, add your task inside one of the targets
below and uncomment it. Other similar extension points exist, see Microsoft.Common.targets. <Target Name="BeforeBuild"> </Target> <Target Name="AfterBuild"> </Target> --> </Project>
```

.csproj a multitargeting

- TargetFrameworks

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

  <PropertyGroup>
    <TargetFrameworks>net48;net5.0</TargetFrameworks>
  </PropertyGroup>

</Project>
```

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.csproj a multitargeting

- Condition

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

  <ItemGroup Condition="'$(TargetFramework)' == 'netstandard2.1'">
    <PackageReference Include="System.Drawing.Common" Version="5.0.2" />
  </ItemGroup>

</Project>
```
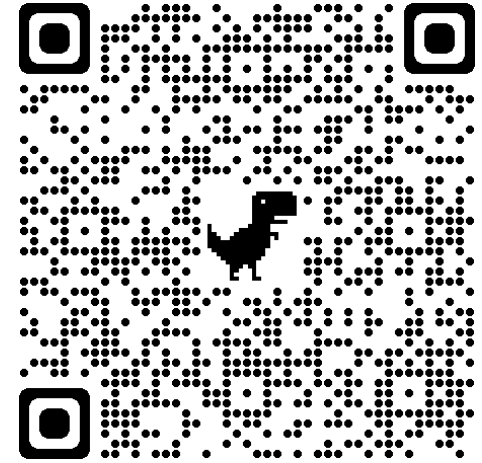
Preprocessor directives


```
#if CORE
            //some .NET CORE specific code

#endif
```

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Preprocessor directives

- Preddefinované symboly pre frameworky
  - https://docs.microsoft.com/en-us/dotnet/csharp/language-reference/preprocessor-directives

```
#if NETSTANDARD
            //some .NET STANDARD specific code
#endif


#if NETFRAMEWORK
            //some .NET Framework specific code
#endif


#if NET
            //some .NET 5/.NET Core specific code
#endif
```

Demo

Services

- Využiť maximálne DI
- Vyhúť sa statickým triedam
  - Skonvertovať existujúce do servicy
  - Lepšia testovateľnosť

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.props

- Vyhne sa opakovanému kódu
- Zmena na jednom mieste sa premietne vo všetkých knižniciach

```xml
<Import Project="..\multitarget.props" />
```

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Demo - continue

MVC

- Partial views sú async
- HtmlHelper $\longrightarrow$ TagHelper
- Child actions $\longrightarrow$ ViewComponents

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Demo - continue

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Q&A ?

 : https://github.com/fvolner/DevMeetup_NET_Multitargeting.git