

# .NET Visual Studio Solution

.NET

.NET projects are contained within a solution. Despite its name, a **solution** is not an "answer". It's simply a container for one or more related **projects** (along with build information, Visual Studio window settings, and any miscellaneous files that aren't associated with a particular project). A solution is described by a text file (extension .sln) with its own unique format; it's not intended to be edited by hand.

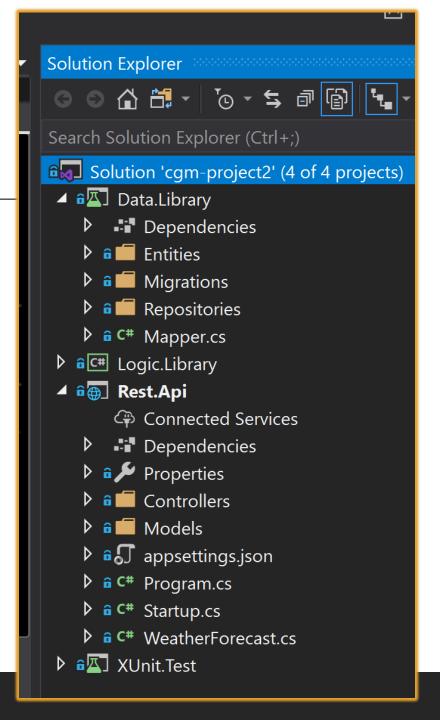
HTTPS://DOCS.MICROSOFT.COM/ENUS/VISUALSTUDIO/IDE/SOLUTIONS-AND-PROJECTS-IN-VISUALSTUDIO?VIEW=VS-2019

## .NET Solution

https://docs.microsoft.com/en-us/visualstudio/ide/solutions-and-projects-in-visual-studio?view=vs-2019#solutions

Projects are contained within solutions. A Solution is a container for <u>one or more</u> related projects along with build information, Visual Studio window settings, and any miscellaneous files that aren't associated with a particular project.

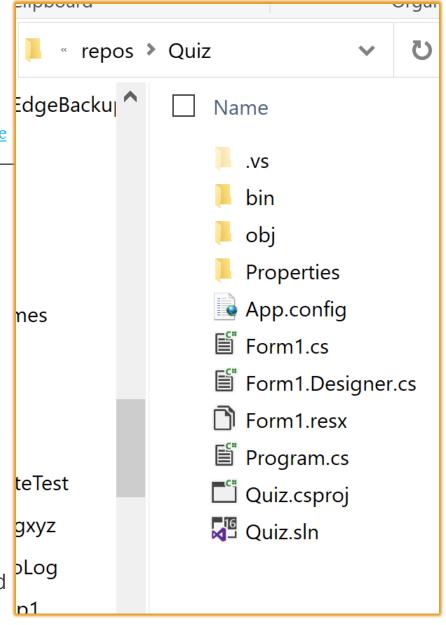
A solution is described by a text file (extension .sln) with its own unique format; it's not intended to be edited by hand.



# .NET Solution - Projects

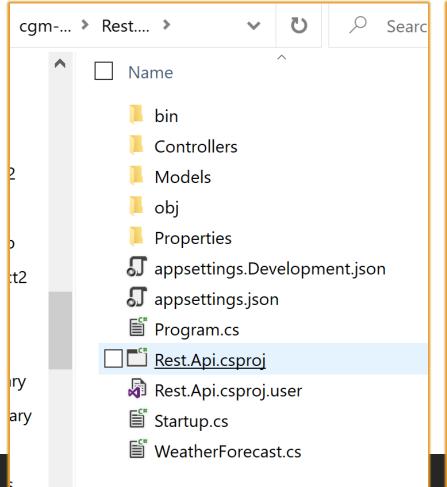
https://docs.microsoft.com/en-us/visualstudio/ide/solutions-and-projects-in-visual-studio?view=vs-2019 https://docs.microsoft.com/en-us/dotnet/csharp/tour-of-csharp/program-structure

- An app or website in Visual Studio starts with a project. A project contains all files that are compiled into an executable, library, or website.
- Those files can include source code, icons, images, data files, etc.
- A project also contains compiler settings and other configuration files that might be needed by various services or components that your program communicates with.
- Visual Studio uses MSBuild to build each project in a solution, and each project contains an MSBuild project file. The file extension for a C# project is .csproj.
- The project file is an XML document that contains all the information and instructions that MSBuild needs in order to build your project, including the content, platform requirements, versioning information, web server or database server settings, and the tasks to perform.



# .NET Solution - Projects

https://docs.microsoft.com/en-us/visualstudio/ide/solutions-and-projects-in-visual-studio?view=vs-2019 https://docs.microsoft.com/en-us/dotnet/csharp/tour-of-csharp/program-structure



```
▶ a C# Mapper.cs
                                                                                        ▶ a C# Logic.Library
                                                                                        ▲ ⊕ Rest.Api
                                                                                             Connected Services
Rest.Api.csproj 🗢 🗙 Logic.Library.csproj
                                Data.Library.csproj
                                                                                          Dependencies
     1 ⊟<Project Sdk="Microsoft.NET.Sdk.Web">
                                                                                          Properties
                                                                                          ▶ a  Controllers
                                                                                          ▶ a ■ Models
            <PropertyGroup>
                                                                                          ▶ a  ppsettings.json
             <TargetFramework>netcoreapp3.0</TargetFramework>
                                                                                          ▶ a C# Program.cs
              <UserSecretsId>d53aec83-0d01-4cab-9f30-cfb9fd362f5a</UserSecretsId</pre>
                                                                                          ▶ a C# Startup.cs
                                                                                          D a C# WeatherForecast cs
            </PropertyGroup>
                                                                                        ▶ a XUnit Test
            <ItemGroup>
              <PackageReference Include="Microsoft.AspNetCore.Authentication.JwtBearer" Version="3.0.0" />
    10 🖨
              <PackageReference Include="Microsoft.EntityFrameworkCore.Design" Version="3.0.0">
                <PrivateAssets>all</PrivateAssets>
                <IncludeAssets>runtime; build; native; contentfiles; analyzers; buildtransitive</IncludeAssets>
              </PackageReference>
              <PackageReference Include="Microsoft.EntityFrameworkCore.SqlServer" Version="3.0.0" />
              <PackageReference Include="Microsoft.EntityFrameworkCore.Tools" Version="3.0.0">
    15 崫
                <PrivateAssets>all</PrivateAssets>
                <IncludeAssets>runtime; build; native; contentfiles; analyzers; buildtransitive</IncludeAssets>
              </PackageReference>
              <PackageReference Include="Microsoft.Extensions.Logging.Debug" Version="3.0.0" />
              <PackageReference Include="Microsoft.VisualStudio.Web.CodeGeneration.Design" Version="3.0.0" />
            </ItemGroup>
            <ItemGroup>
              <ProjectReference Include="..\Data.Library\Data.Library.csproj" />
              <ProjectReference Include="..\Logic.Library\Logic.Library.csproj" />
            </ItemGroup>
```

Solution Explorer

▶ **a** Migrations

▶ a ■ Repositories

Solution 'cam-project2' (4 of 4 projects)

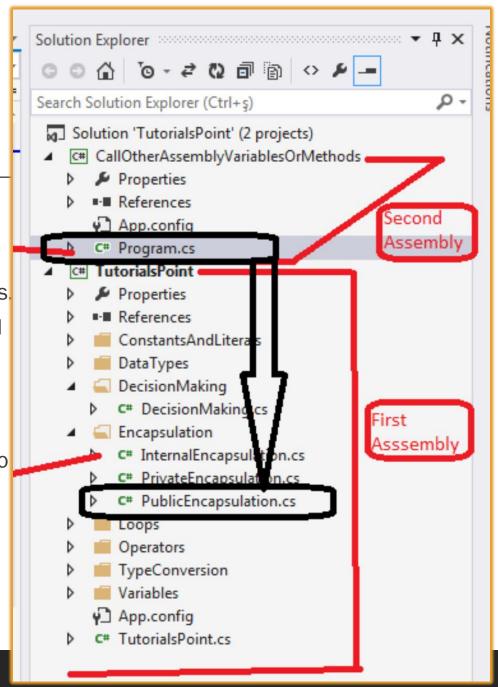
### .NET Solution - Assembly

https://docs.microsoft.com/en-us/dotnet/standard/assembly/

### Assemblies:

- form the fundamental units of deployment, version control, reuse, activation scoping, and security permissions for .NET-based applications.
- is a collection of types and resources that are built to work together and form a logical unit of functionality.
- take the form of executable (.exe) or dynamic link library (.dll) files.
- are the building blocks of .NET applications.
- provide the Common Language Runtime with the information it needs to be aware of type implementations.

In .NET Core and .NET Framework, you can build an assembly from one or more source code files. Each Projects files are compiled (combined) into one big .dll file called an Assembly.



### .NET Solution - Assembly

https://docs.microsoft.com/en-us/dotnet/standard/assembly/

### An **assembly** is:

- Code that the CLR executes. Each assembly can have only one entry point (Main).
- <u>Security boundary</u>. An *assembly* is the unit at which permissions are requested and granted.
- <u>Version boundary</u>. The assembly is the smallest versionable unit in the CLR. All types and resources in the same *assembly* are versioned as a unit.
- <u>Deployment unit</u>. When an application starts, only the *assemblies* that the application initially calls must be present. Other *assemblies* are retrieved on demand.

