.NET Visual Studio Solution

.NET CORE

*.NET **projects** are contained within a **solution**. A **solution** is a container for one or more related **projects**.*

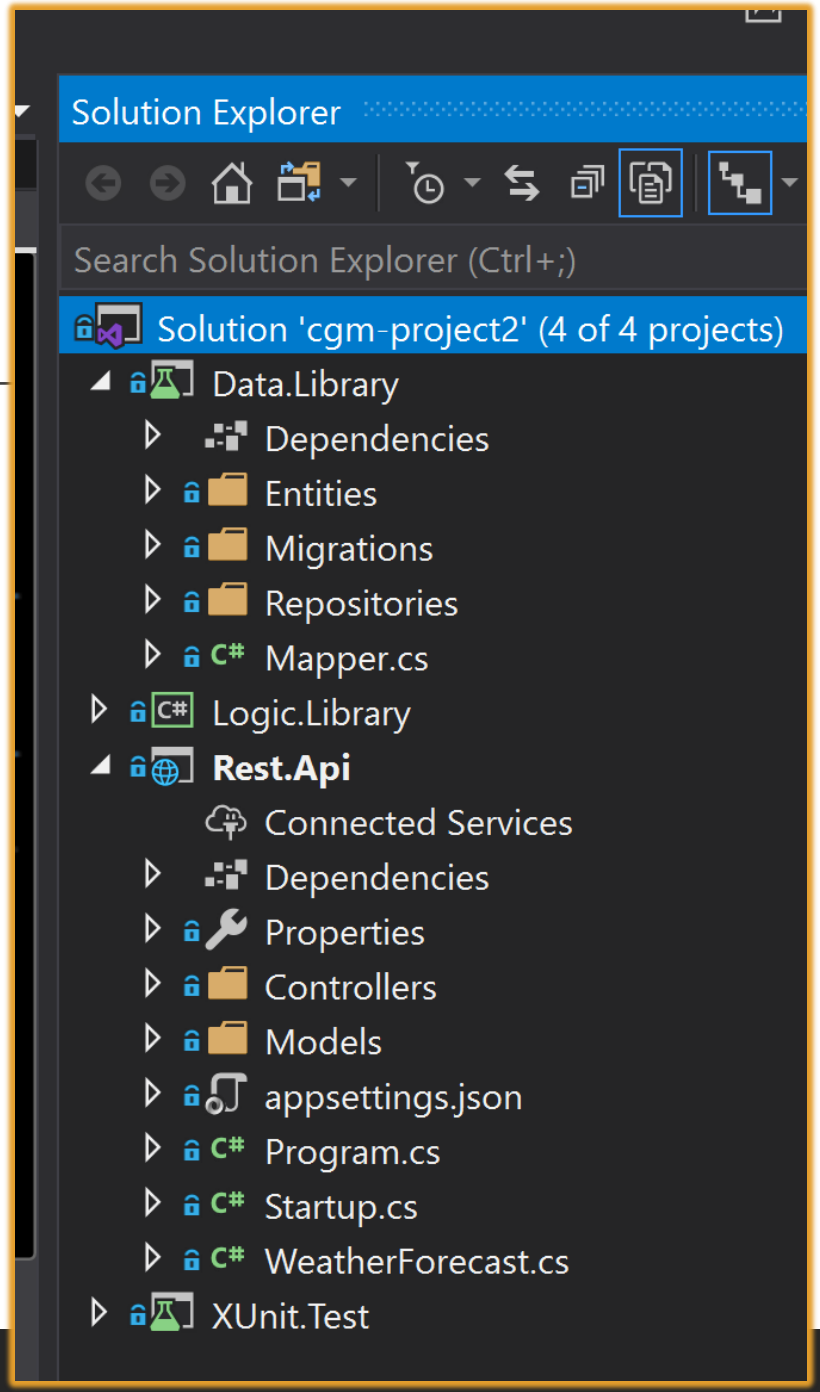
https://docs.microsoft.com/en-us/visualstudio/ide/solutions-and-projects-in-visual-studio?view=vs-2019

.NET Solution

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

A Solution is 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.

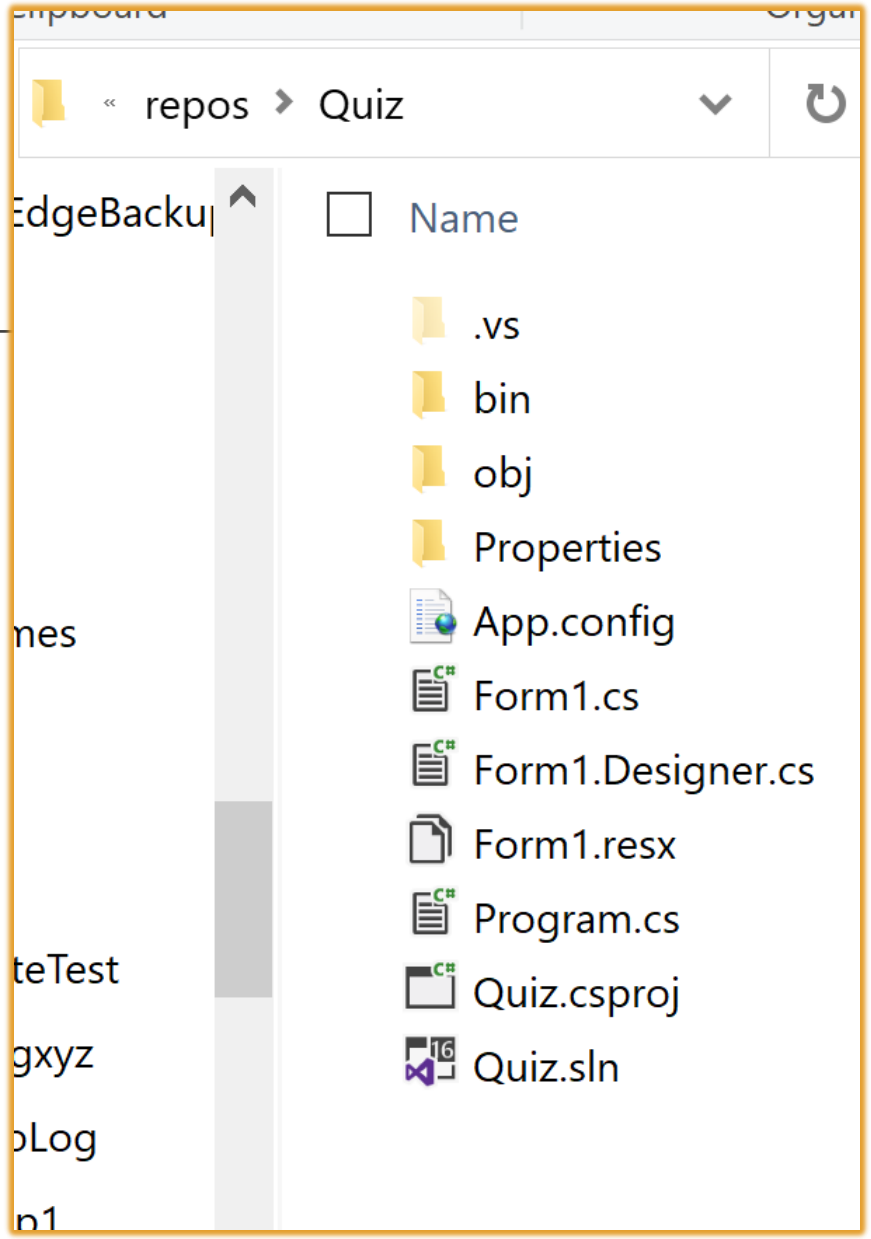
A solution is described by a text file (extension .sln) with its own unique format; it's not intended to be edited by hand.



.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 in Visual Studio starts with a project. A project contains all files that are compiled into an executable or library.
- Files can include source code, icons, images, data files, etc.
- A project contains compiler settings and other configuration files that might be needed by various services or components.
- 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 a project including the content, platform requirements, versioning information, web server or database server settings, and the tasks to perform.



.NET Solution - Projects

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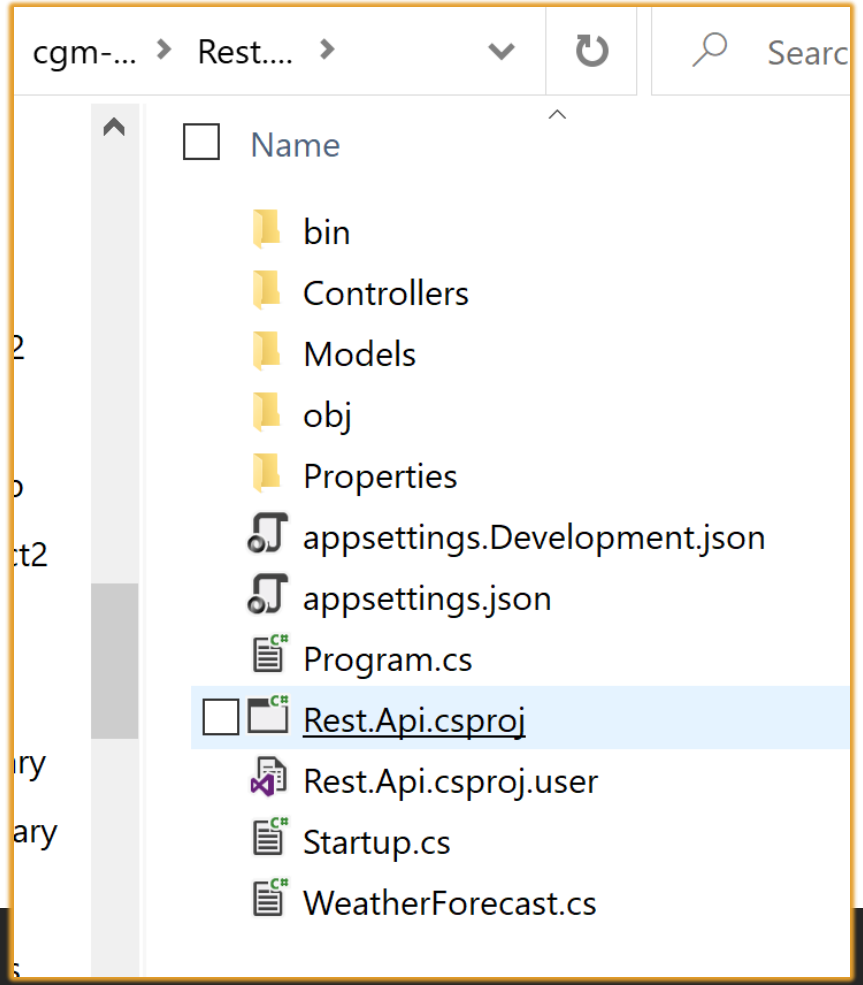
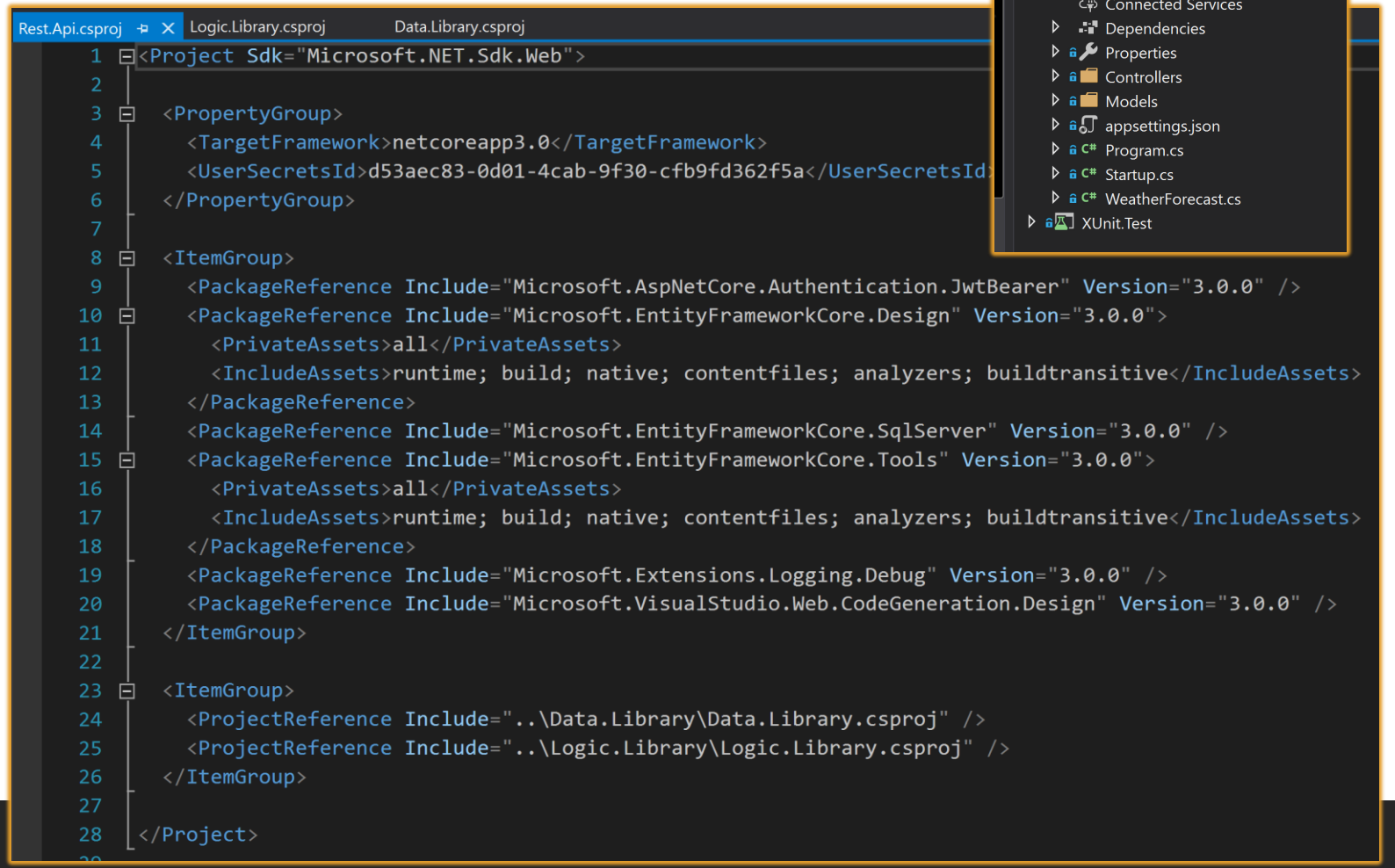
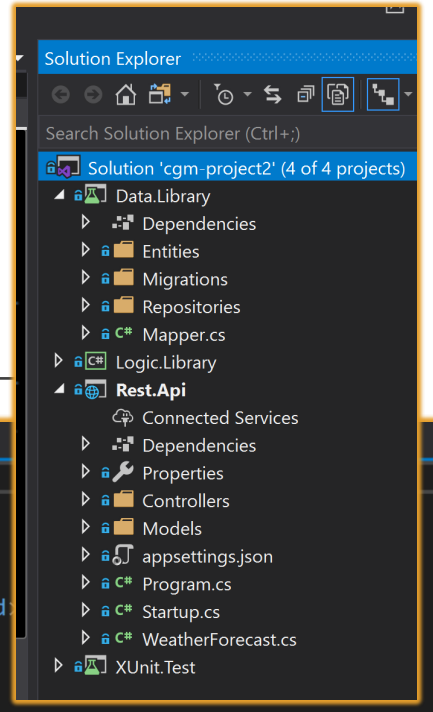






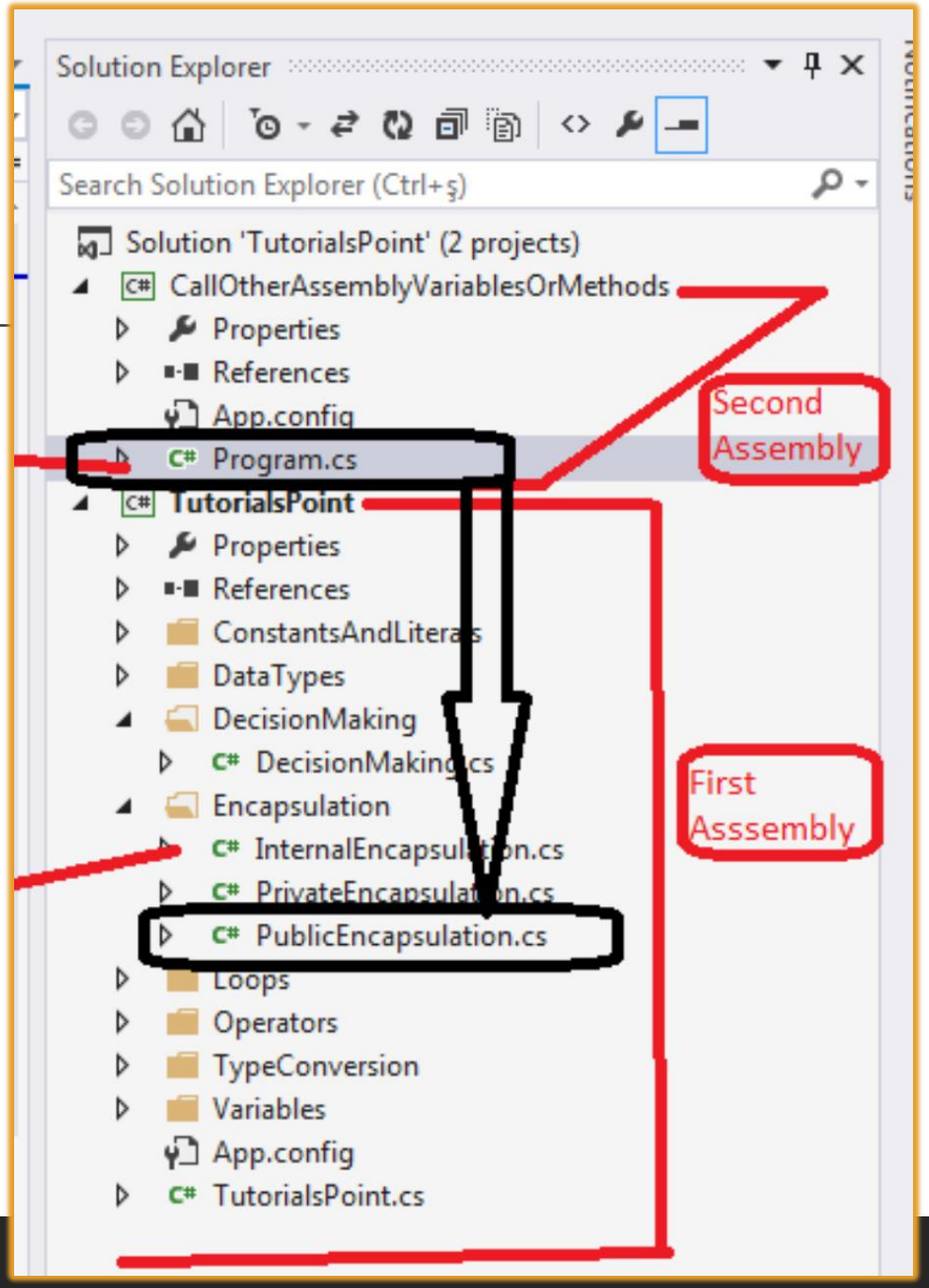
.NET Solution - Assembly

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.
- are a collection of types and resources that work together and form a logical unit of functionality.
- take the form of ***executable (.exe)*** or ***dynamic link library (.dll)*** files.
- 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

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An ***assembly*** is:

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