.NET Visual Studio Solution

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

.NET Solution

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

A *solution* is described by a text file (extension .sln) in XML format. It is not intended to be edited by hand.
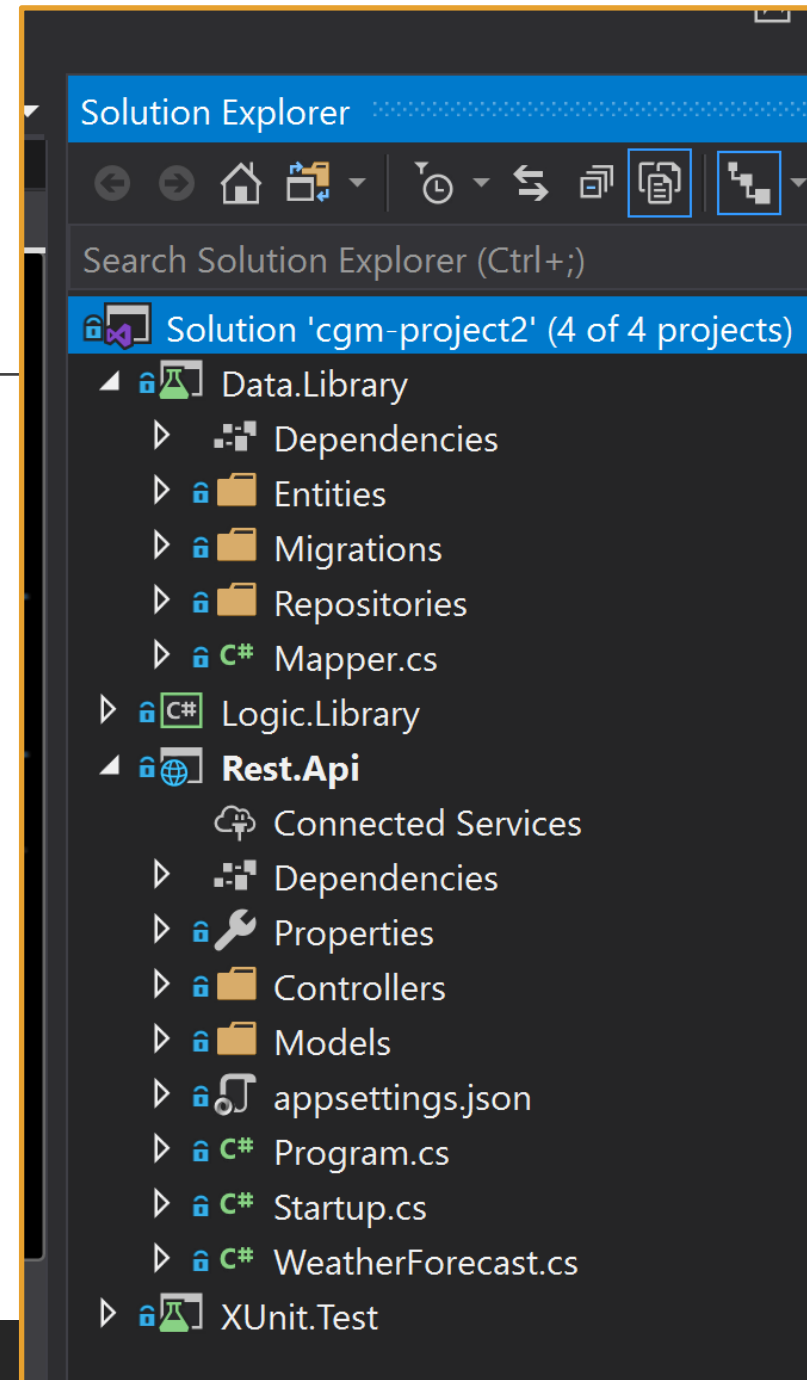
.NET Solution - Projects

- An app in Visual Studio starts with a project. A project contains all files that, when compiled, are placed into an executable (.exe) or a library (.dll).

- 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.
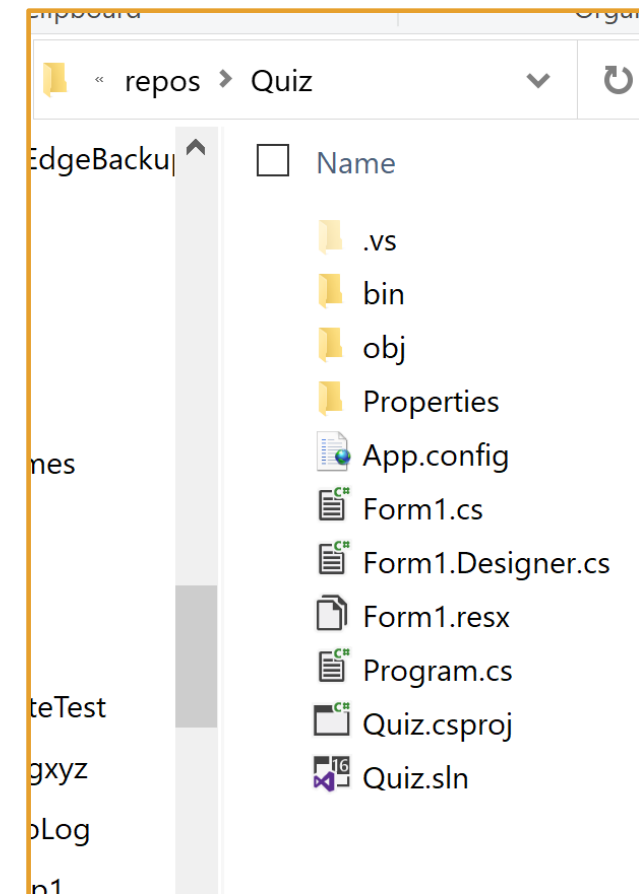
.NET Solution - Projects

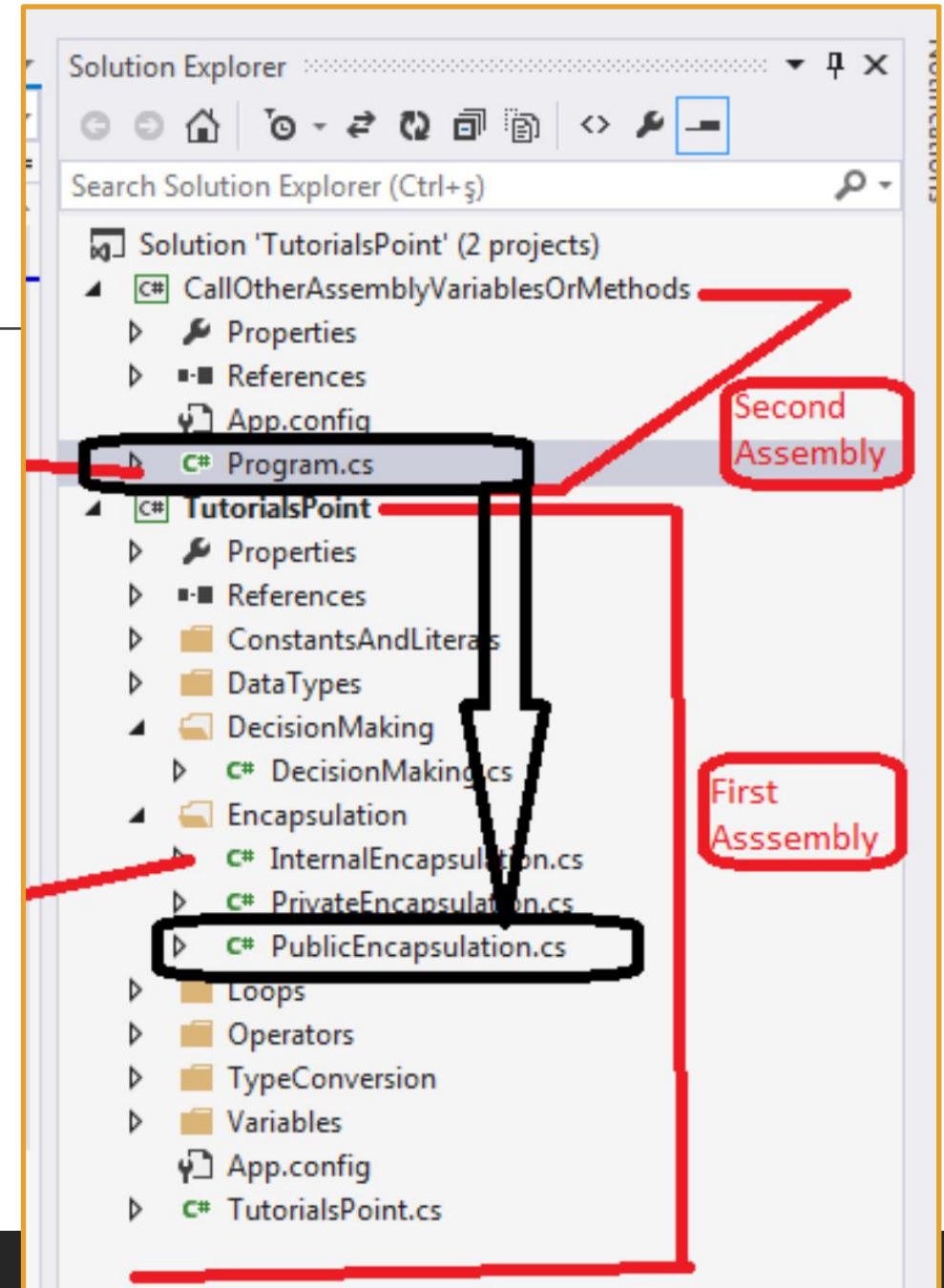# .NET Solution - Assembly
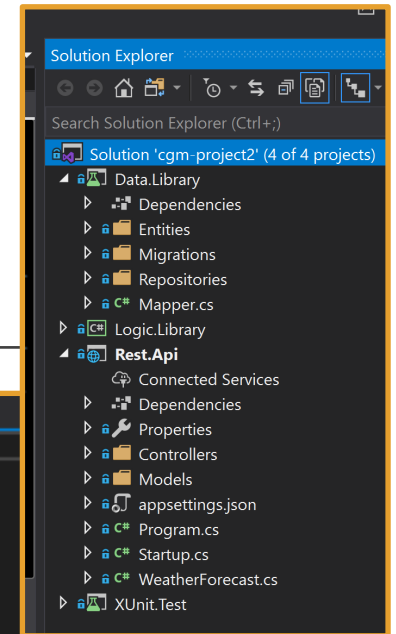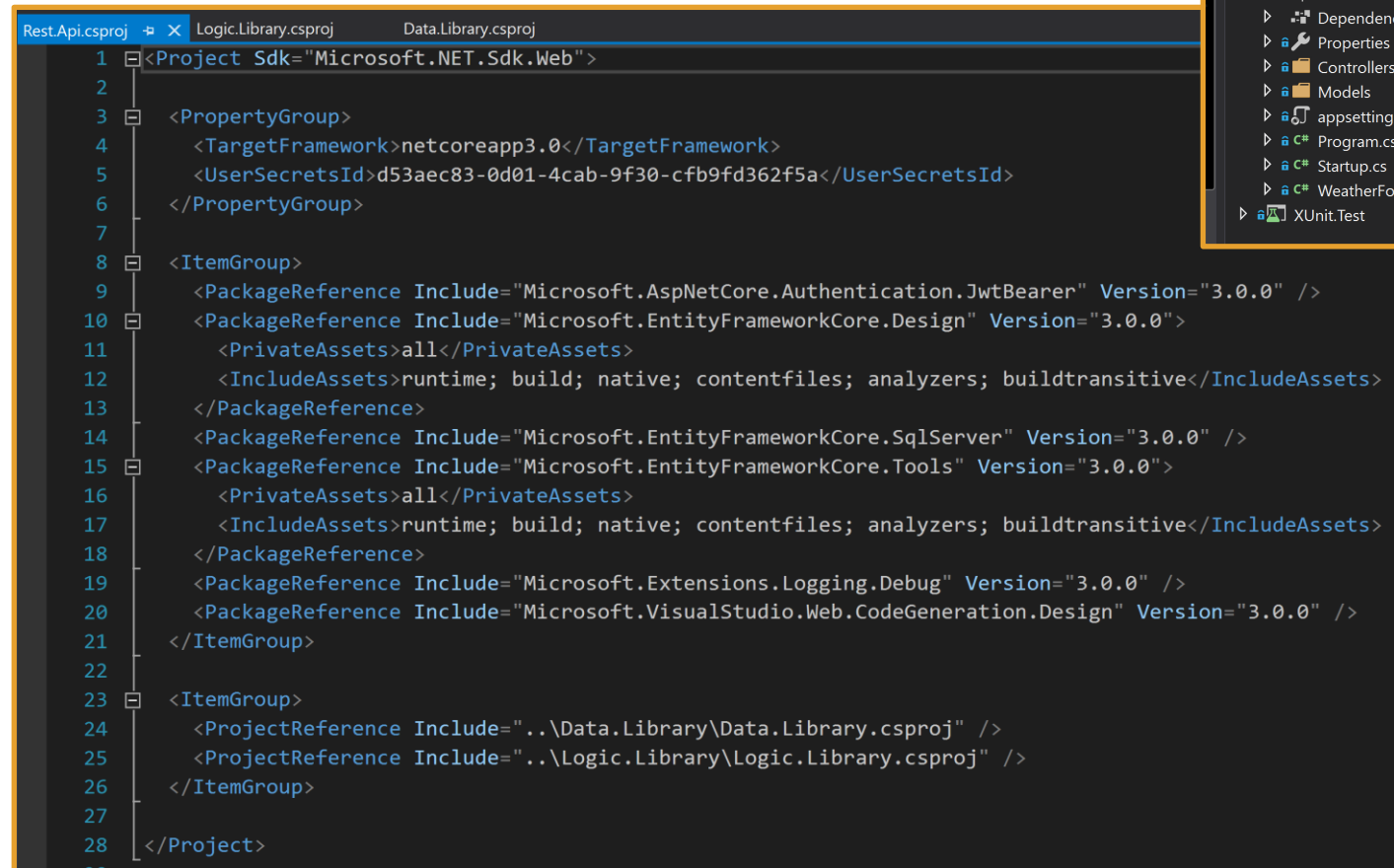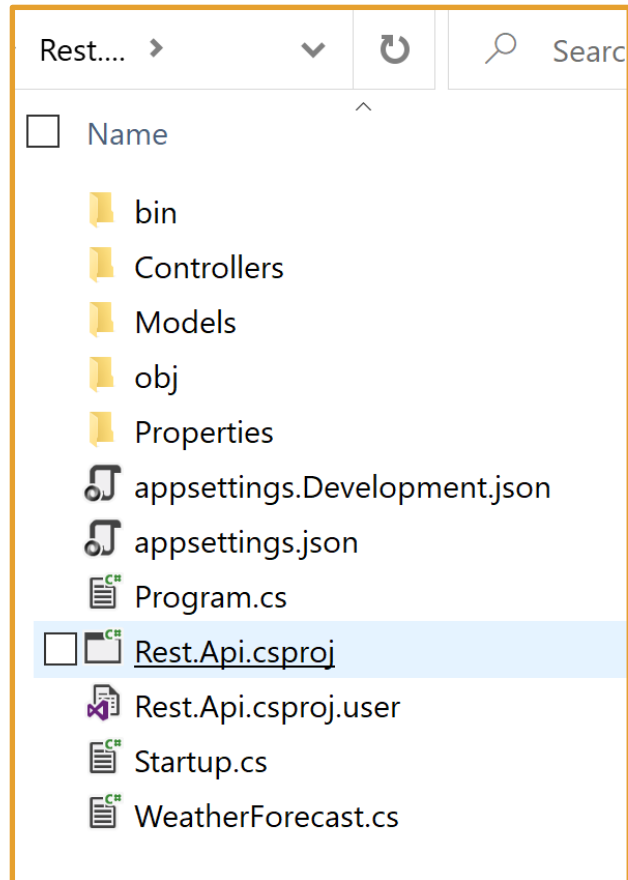
https://docs.microsoft.com/en-us/dotnet/standard/assembly/

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***, you can build an assembly from one or more source code files. Each projects' files are compiled (combined) into one .dll of .exe file called an ***Assembly***.

.NET Solution - Assembly

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*.