.NET is part of the visual studio installation.

When we run our apps from Vis studio they run on top of the .NET framework. Our apps can then take advantage of services such and programming interfaces that .NET provide.

These services include:

* The ability to write to databases
* The ability to read from XML
* Cryptography
* Configuration
* Network communications
* Many more…..

This means .NET can be used to build a wide variety of apps that can run on different platforms

The .NET framework can be considered as consisting of 2 pieces:

* CLR. Common Language Runtime
* FCL. Framework Class Library

CLR is an execution environment for .NET apps. It’s the CLR’s responsibility to manage your app during runtime and to tear it down safely when it’s finished executing or if it has an unrecoverable error.

* Memory management. It will actively track all of the memory that your program uses
* It virtualises the execution of the program so for the most part you don’t need to worry about hardware or OS versions. This creates an OS and Hardware independence.
* Supports and manages apps written in multiple languages.

The FCL is a library of functionality to build apps. BCL (base class library) is a sub-set of FCL that works everywhere. Some FCL can have features that are platform specific.

C:\Windows\Microsoft.NET\Framework\v4.X.XXXXX\**csc** – the visual C# compiler

Assembly – the files a C# compiler generates. Exes or .dll’s. They contain metadata as well that explains the content.

MSCorLib.dll – a core library that contains core types. It lives in the Global Assembly Cache on a windows machine.

Global Assembly Cache – a store for the FCL assemblies on a windows machine. Located here: C:\Windows\Microsoft.net\assembly. The assemblies in the GAC are available to any .NET program that runs on the machine.

Compiler builds into the bin (binaries) directory.

At the top of a metadata file is the assembly the class comes from.

.NET only loads a referenced assembly when a project uses a class from the assembly so referencing does not have an overhead

Object browser can be used to look at the interface of an assembly and its classes.

Gacutil.exe – GAC tool allows you to view and manipulate the contents of the GAC and download cache.

Regsvcs.exe (.NET services installation tool) – Loads and registers an assembly. Generates registers and installs a type library into a specified COM app. Configures services that you’ve programmatically added to your class.