

3DBuzz C# 101 (My Notes)

INTRODUCTION TO C# - WEEK 1

(PART 1)

So What Is Programming?

- ▶ A Program is an application. An executable file that opens in the operating system and does something. Like your calculator.exe
- ▶ Programming is the concept of taking a language and writing it out in such a way that it can be used to perform a variety of tasks.
- ▶ There are many programming languages. Just a few would be. C#, C++, VB, JScript, Boo, IronRuby, IronPython, F#, Cobra

C# Language

- ▶ C# is an object-oriented language that compiles into .net assemblies.
- ▶ C# was created by Microsoft and is an adaptation of Java and C++. (Closer to Java than C++).
- ▶ -Something else here-

Why Learn C#?

- ▶ C# is a massively versatile language.
- ▶ Variety of environments that C# can target:

Windows Applications	Console Applications
Web Applications	Mobile Applications
Database Applications	Unity
Windows Services	XML Services
Web Services	
- ▶ So by learning just this one language we can develop for all of the above.
- ▶ Also since C# was conceived by my Mummy Java and Daddy C++ after learning C# picking up either of those languages should be relatively simple.

What is an IDE?

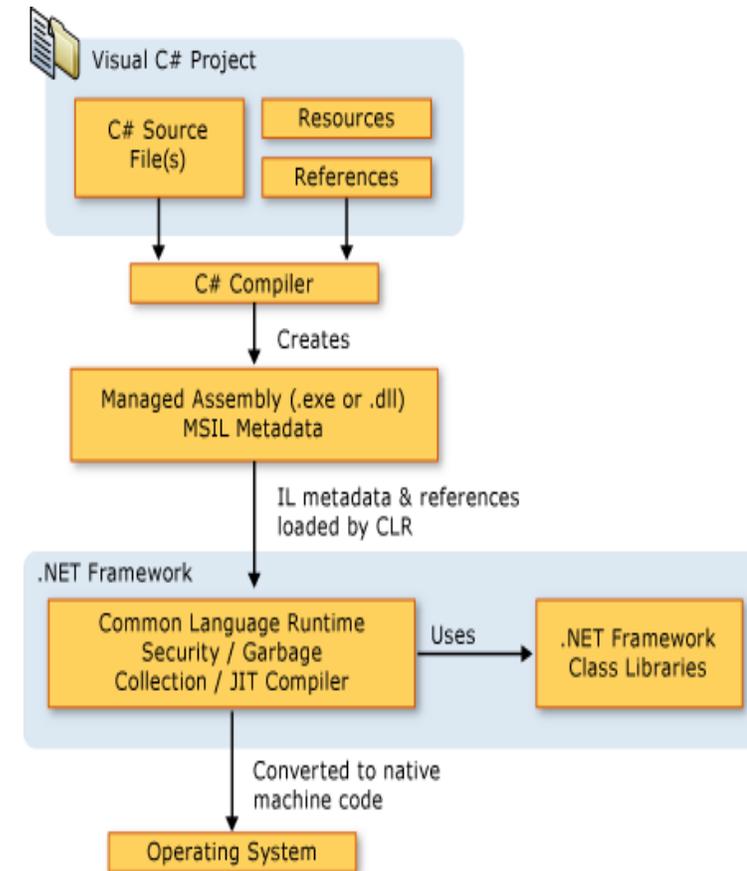
- ▶ IDE is the acronym for Integrated Development Environment. [The one being used for this course is Visual Studio]
- ▶ IDE's are like feature rich notepads that try to make programming as simple as possible. Through common features such as; Syntax highlighting, Error Logs to help with debugging, In-Built Compiler aids etc.
- ▶ An IDE will compile your C# code into a file that your computer can understand. In this case a .net assembly which is an Intermediate Language.

IDE Example 1.) Visual Studio

IDE Example 2.) Mono-Develop

What is Compilation?

- ▶ Compilation is the process of compiling from user written code which a human can understand(C#) and turning it in to an Intermediate Language which the "computer"[CLR] can understand (.NetAssembly)
- ▶ Note: Everything that happens before compilation is known as "Compile Time".
- ▶ When you compile through the use of an IDE (at least in visual studio) you are just taking the code and running it through the csc.exe program that is on your OS by default.



What is an IL?

- ▶ As mentioned in the previous slide IL is the acronym for "Intermediate Language".
- ▶ An Intermediate Language is like a halfway point between human-readable friendly languages like c# and computer language (machine code).
- ▶ We end up with an Intermediate Language after we compile our code.
- ▶ The IL that our code ends up being stored as is dependant on the initial language we were working with e.g.;

Original	Compile	Intermediate Language
C#	->	.NetAssemblies
C/C++	->	.exe
JS	->	Browser(?)
Ruby	->	Virtual Machine(?)

What is the .NET Framework?

- ▶ .NET is a combination of a lot of things including;
 - Languages such as C#, F#, C++/ CLI, VB.net, Boo, IronRuby, IronPython, JScript, Cobra
 - BCL (Base Class Library) collection of pre-built things to improve development efficiency and speed.
 - Runtime. Runtime is as it sounds, the process of your code running on your computer.
- ▶ The "Runtime" of .NET is called CLR (Common Language Runtime)
 - CLR includes a few features such as:
 - Garbage Collection
 - Reflection
 - Security
- ▶ The primary function of the CLR program is to take your Intermediate Language and convert it in to machine readable code.

What are .NetAssemblies?

- ▶ .NetAssemblies are an Intermediate Language (IL)
- ▶ .NetAssembly files are what you end up with after you have compiled one of the languages supported by the .NETFramework. Including C#.
- ▶ .NetAssemblies are platform and operating system neutral. Anything containing a CLR can understand them along with any of the other ILs produced from the .NetFramework supported languages.

MacOS	-	Mono
Windows	-	Microsoft CLR
Xbox	-	Microsoft CLR
Linux	-	Mono

Resources

- ▶ (IMPORTANT: The notes shown in this PowerPoint are only taken from the first 37 minutes of the video below. Which can be broken in to 2 parts. An "Intro" and a "Small Programming Task".)
- ▶ All Notes Taken from – 3D Buzz C# 101: Introduction to C# / Week 1
- ▶ Video Part 1 || Introduction || 00:00 – 37:00
 - ▶ Download Link to the related video: [Week 1: Introduction to C#](#)
 - ▶ Link to class enrolment: is [Here](#) (You need [Member/Sponsor/Subscriber](#) (*I think?*) which is 35\$ a Month.)
 - ▶ Thread Discussing further reading: [Here](#) || || Suggested Bookmark: [This Is Awesome!](#)
- ▶ PS: If anyone noticed a mistake in this PowerPoint please fix it and upload the fixed version. Or better yet point it out to me in the thread so I can update it myself. I tried my best to understand it, but I'm learning this from scratch myself. I know absolutely nothing about programming so mistakes are possible. I don't think I made any however.
 - ▶ Notes Taken by Kirito
 - ▶ Diagram taken from: <http://msdn.microsoft.com/en-us/library/z1zx9t92.aspx>