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1/13/2018

CMPR.X403.(806) Homework 1

New features in the latest version of .NET

1. JIT: Just-In-Time compiling, which allows all managed code to run in the native machine language of the system on which it is executing. If I’m understanding this correctly, this means JIT allows my compiled code to run on Windows’ machine language when I’m compiling on a Windows machine, or Linux’s machine language when I’m compiling on a Linux machine.
2. CLR: Common Language Runtime, an execution environment that manages memory, thread execution, code execution, code safety verification, compilation, and other system services. It also enforces code robustness by implementing a strict type-and-code verification infrastructure called the Common Type System (CTS).
3. CTS: Common Type System, the library (is it a library?) that defines the predefined data types that are available in the intermediate language. CTS supports two general categories of types:
   1. Value types, which contain their data
   2. Reference types, which store a reference to the value’s memory address (is this like a pointer?)
4. Assemblies: Libraries (are they libraries?) that contain the code that the Common Language Runtime executes. Assemblies form a security boundary, a type boundary, a reference scope boundary, a version boundary, and a deployment unit for the Common Language Runtime. (Do assemblies reference the Common Type System?)

Differences between C++, C#, and Java

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| **Feature** | **C++** | **C#** | **Java** |
| Performance | Better for ‘faster’ (e.g. autonomous car) applications | Better for ‘slower’ applications (e.g. word processing) | Better for ‘slower’ applications (e.g. word processing) |
| Garbage collection | No automatic garbage collection | Has automatic garbage collection | Has automatic garbage collection |
| Polymorphism | The user must invoke the ‘virtual’ keyword in a base class (can we use the ‘override’ keyword in C++?) | The user must invoke the ‘virtual’ keyword in a base class and the ‘override’ keyword in a derived class | Enabled by default |

Console application in C# that accepts arguments and prints them in reverse order on the console