

C#

COMP750

Thanks to Sahdev Zala for the notes

Library Definitions

- C++ uses "#include" which is just a cut and past of the specified file.
- Java uses "import" to specify directories to be searched for undefined methods.
- C# uses "using" in a manner similar to Java import.

Main Method

- C++ uses a function not a method
`int main(int argn, char *argv[])`
- Java has a method of a public class
`public static void main(String[] args)`
- C# is similar with
`public static void Main(string[] args)`
- The Main method can also return an int or be parameterless.

Console Output

- Java uses

```
System.out.println("Hello world!");
```
- C# uses

```
System.Console.WriteLine("Hello world!");
```
- Note that `System` is a namespace in C#, not a class. You can omit "System" if you put "import System;" at the beginning of the program

Constants

- In C++ constants are

```
#include THING 47  
const int THING = 47;
```

- In Java

```
static final int THING = 100;
```

- in C#

```
const int THING = 100;
```

readonly variables

- In C# you can declare a variable to be “readonly”.
- A readonly variable can be set to a value in a constructor method, but cannot be changed elsewhere.

Logical Variables

- In C++ you can use bool or any variable where zero is false and not zero is true.
- In Java boolean can be true or false. There is a similar class Boolean.
- In C# the primitive type is bool.

Inheritance

- A subclass in Java is declared as
class B extends A
- Everything inherits from Object
- In C# the extends keyword is replaced by a colon, same as in C++
class B : A
- Everything inherits from System.Object

Overriding Methods

- In Java any method declared in class A can be overridden by a subclass of class A unless the method is declared as “final”.
- In C# a method cannot be overridden unless it is declared “virtual”. The overriding method must be declared “override”.

Value and Reference Types

- In C++ objects are value types.

`widget thing;`

- allocated memory for a widget.

- In Java and C# objects are reference type

`widget thing;`

- allocated memory for a pointer to a widget that must be created.

`thing = new widget();`

Boxing

- In Java primitive types are not objects.
- In C# primitive types are not objects but they will be automatically “Boxed” in an object if needed.

Documenting

- Java supports formatted comments that are interpreted by javadoc to create html formatted documentation.
- C# allows XML formatted comments that can be interpreted by Visual Studio to create html formatted documentation.

Automatic Java to C#

- Microsoft Java Language Conversion Assistant is a tool that automatically converts existing Java-language source code into C#