**Reading 9: Java!**

1. **List and describe at least 5 differences between C++ and Java**

1. Portability:

* 1. Both languages are compiled, but C++ compiled code is platform specific. Depending on what platform or environment you want your C++ code to run, the final result needs to have been compiled for that platform or environment. Java’s compiled code is a byte code, which is platform independent (CAN RUN ON ANYTHING!?!?!). This feature makes it portable.

1. Memory Management:
   1. In Java and similarly, C#, memory management is essentially on autopilot thanks to the language architecture’s “garbage collection” system. In Java and C#, you can dynamically create objects all day mang! No need to worry about that DELETE, brah. Not the case w/ C++.
2. Pointers
   1. Since we’re on the subject of memory management, which pointers can tend to leak memory if not appropriately handled in C++, Java and C# do have pointers, but the support for them is not to the extent that we see in C++.
3. Overloading
   1. Kind of like my this and next semester, C++ will let you overload methods(functions) and even let your mom overload operators like these: <, >, &&, !=, etc. Java, on the other hand, will let you overload methods, but your mom isn’t allowed to overload any operator…. Actually, no one is allowed to overload operators.
4. Type of Language
   1. C++ is both a procedural and an object-oriented programming language. Java is strictly object oriented, like C#. I mean, the entry point for running a Java program is REQUIRED to be contained within a class, so… objects for days.

2. What will the following code do in each language? Assume student is a valid class.

Student student;

student.gpa = 3.5;

A: In C++, the code would instantiate an object of the Student class named ‘student’, and assuming the gpa member variable of student is public, sets the value of gpa to 3.5 for the student object. This would ideally be done with getter / setter member methods and setting gpa to private, but… ya know. In Java, the code just won’t work because the student object hasn’t actually been created. Code to instantiate the object would be: Student student = new Student();