Week 7 Discussion #1

How does interpretation differ from compilation? What does Java use? What are the advantages and disadvantages? Discuss.

The code for compiled programs is converted into native machine code before being executed. Interpreted programs are read line-by-line and parsed into component operations, which are executed. Compiled programs run faster because the machine code loads directly in to the processor, while interpreted programs must be read and translated into machine code at the time of execution; however, interpreted programs are easier to debug, since it can be modified and rerun, while compiled code must be recompiled after each modifications (Lindsey, 2005).

Java is both a compiled and interpreted language. The programming code text is compiled, but the machine code is not run in the processor. Rather it is compiled to run in the Java Virtual Machine (JVM) environment, which simulates a processor that executes the "compiled" code. The JVM interprets the compiled code at runtime for the processor. This strategy makes Java a highly-portable language because it is interpreted for the processor, and also gives it some optimization as a result of the code being compiled for the JVM; however, it does have the disadvantage of having to be recompiled before execution, adding an extra step in the debugging process.

Clark S. Lindsey, *JavaTech: Introduction to Scientific and Technical Computing with Java*, Cambridge University Press, October 2005.