Topics for today:

Extended aside (continued): What's the big deal about Java, anyway?

Review

Recall: Java

Java is a high-level programming language, similar to C++ (and many other languages).

It was designed by researchers at Sun Microsystems in the mid-1990s for use with the Internet.

Recall the problem:

If you want to distribute a program (for free or for sale) without sharing the source code, the program must be compiled.

BUT– *how do you compile a program when you don't know what machine is going to run it?*

Java bytecode

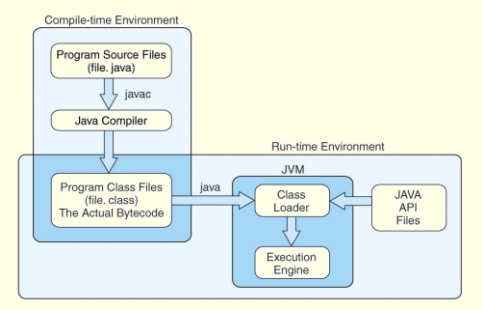
A Java program is first compiled to Java *bytecode*.

Java bytecode uses an instruction set architecture for a machine that does not exist – the *Java Virtual Machine* (JVM).

Java bytecode (continued)

A program in bytecode can be transmitted across the Internet. Each computer (or even each browser) will have its own JVM interpreter, which will interpret the bytecode and run it locally.

Java Programming Environment



JVM features

- Stack-based (0-address instructions)
- Each opcode is one byte
- Two's complement representation of integers
- Unicode (16-bit) characters
- Base-offset references to memory (segmentation)