In Class

- Development Process
- Basics of Java Syntax
- Java fundamentals
  - ➢ Primitive data types
  - ➢ Static typing
  - ➢ Arithmetic operators
  - ➢ Relational operators
- Assignment Submissions

Your Development Process

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Things native English speakers know, but don't know we know:

🌐 Traducir del inglés

adjectives in English absolutely have to be in this order: opinion-size-age-shape-colour-origin-material-purpose Noun. So you can have a lovely little old rectangular green French silver whittling knife. But if you mess with that word order in the slightest you'll sound like a maniac. It's an odd thing that every English speaker uses that list, but almost none of us could write it out. And as size comes before colour, green great dragons can't exist.

Review

- What are qualities of good software?

- What is Java?
  - Benefits to using Java?

- How do you compile a Java program?
  - How do you run/execute a Java program?
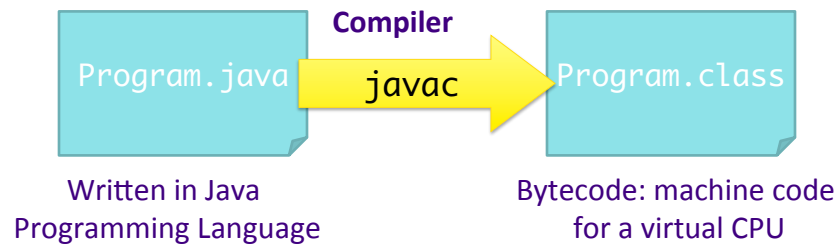
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Review: Benefits of Java

- Rapid development of programs
  - Large library of classes, including GUIs, Enterprise-level applications, Web applications
- Portability
  - Run program on multiple platforms without recompiling
- Statically-typed language
  - Compiling - find some errors before execution, performance benefits

Review: Java Programming Language

- Entirely object-oriented
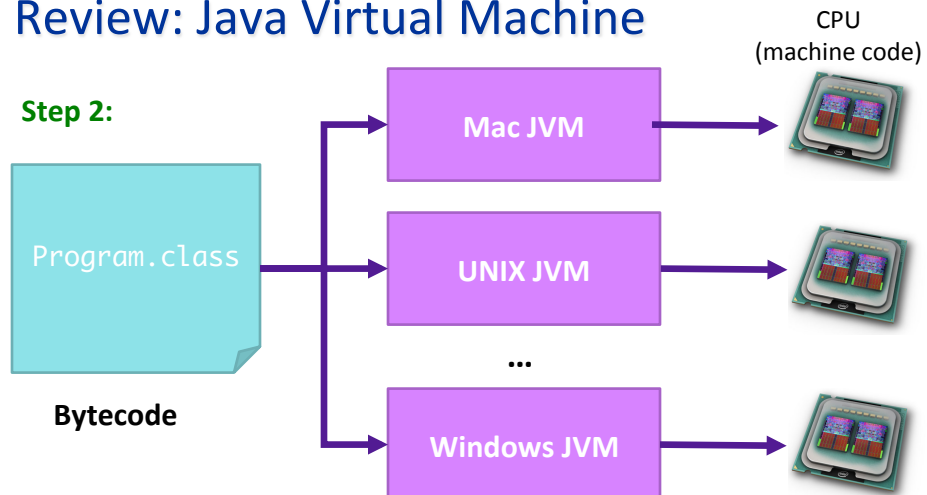- Similar to Python

Step 1:

Program.java	**Compiler** `javac` →	Program.class
Written in Java Programming Language		Bytecode: machine code for a virtual CPU

Review: Java Virtual Machine

CPU
(machine code)

Step 2:

Program.class

Bytecode

Mac JVM →

UNIX JVM →

...

Windows JVM →

- Same **bytecode** executes on each platform
- Don't need to provide the source code

Review: Java Development Kit

- JDK: Java Development Kit
- SDK: Software Development Kit
- Free from Oracle
- Contains
  - ➤ *javac*: Java compiler
  - ➤ *java*: Java Virtual Machine
  - ➤ Java class libraries

  http://www.oracle.com/technetwork/java/javase/
  downloads/index.html

Example Java Program

```java
/**
 * Our first Java class
 * @author Sara Sprenkle
 */
public class Hello {
   public static void main(String[] args) {
      System.out.println("Hello");
   }
}
```

Identify the components of the program.
How would you run the program?
How are Java the same and different?

Code Style

```
/**
 * Our first Java class
 * @author Sara Sprenkle
 */
```

- **Comments** at top of program
  - ➢ Must include your name
  - ➢ High-level description of program
- Proper **indentation**
  - ➢ Similar to Python
  - ➢ Everything within sets of {} is indented the same

```java
public class Hello {
    public static void main(String[] args) {
        System.out.println("Hello");
    }
}
```

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Java vs. Python, so far…

- *Semantics* the same, *syntax* different
  - ➢ Blocks of code
  - ➢ End statements
- Access modifiers
- Data type declarations
- Class-based programs
- Compiled

We'll see more differences as we go…

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Review

- How do we display output in Java?
- What are some of the primitive data types of Java?
- What is the syntax for declaring a variable in Java?
- How do we declare that a variable such that it can't be changed?

Java Development Kit: JDK

- Installed on Linux machines
  - ➢ Java 1.8 should be reachable using default path
  - ➢ To see which executable you're executing use
    - `which java`
    - Should be `/usr/bin/java`
- Run `java -version` to determine which version you're running
- You can download the JDK for your machine from `http://www.oracle.com/technetwork/java/javase/downloads/index.html`
- JRE is for *running* Java applications
  - ➢ Does not include the compiler

Unix Output Redirection: >

- We can redirect output to a file
  - For example
    ```
    ls *.java > java_files.out
    ```
  - Above command saves the output from the `ls` command into the file named `java_files.out`
- This is how you will save output from your Java programs initially
  - For example
    ```
    java Intro > out
    ```

    Please follow instructions on names

Programming Assignment 0

1. Write a program called `Intro.java`
   - Displays information about yourself
2. Fix compiler and logic errors in a program

- Due Wednesday before class
- Go to Course Web Page
  - Bookmark it!
- Activate your Piazza account and check it out