Tinker Academy

AP Computer Science Prep (Java DS & Algo)

Lecture 1 - Java Fundamentals 1 (Origin & History)

Winter 2015

Origin & History Of Java

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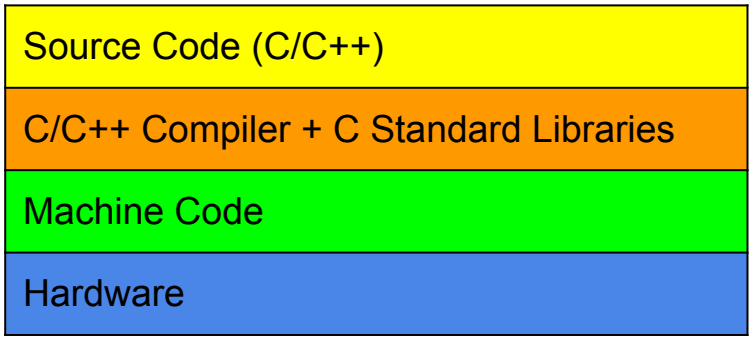
Origin & History of Java

- Early 1990s, popular languages C, C++
- However, there was a problem...



C/C++ Source Code used C “Standard Libraries”
Unfortunately “standard” libraries were not standard across different types of machines (IBM, NeXT)
Likewise C/C++ compilers, machine architectures not standard

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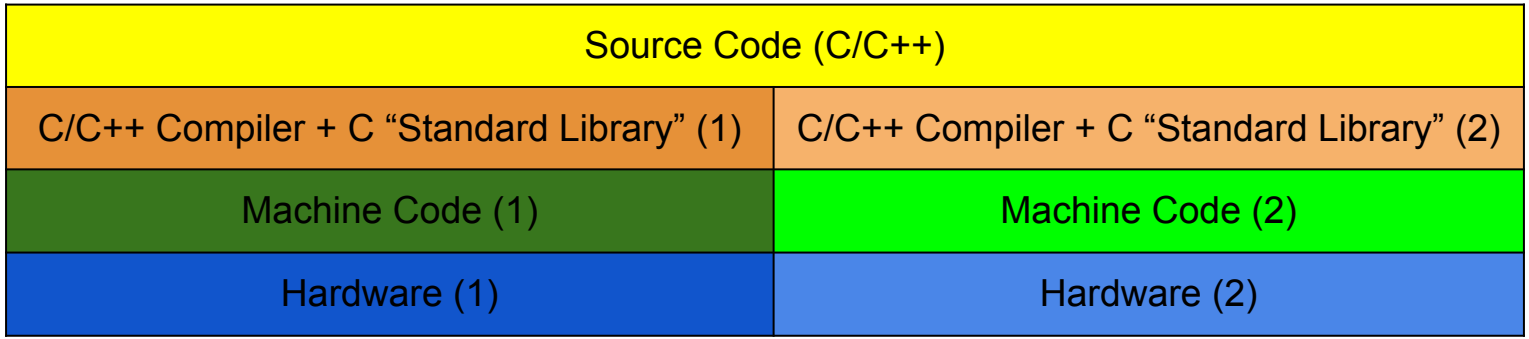
Origin & History of Java

- Leading to Write Once, Compile Everywhere
- Source code was written very carefully to handle different machine architectures



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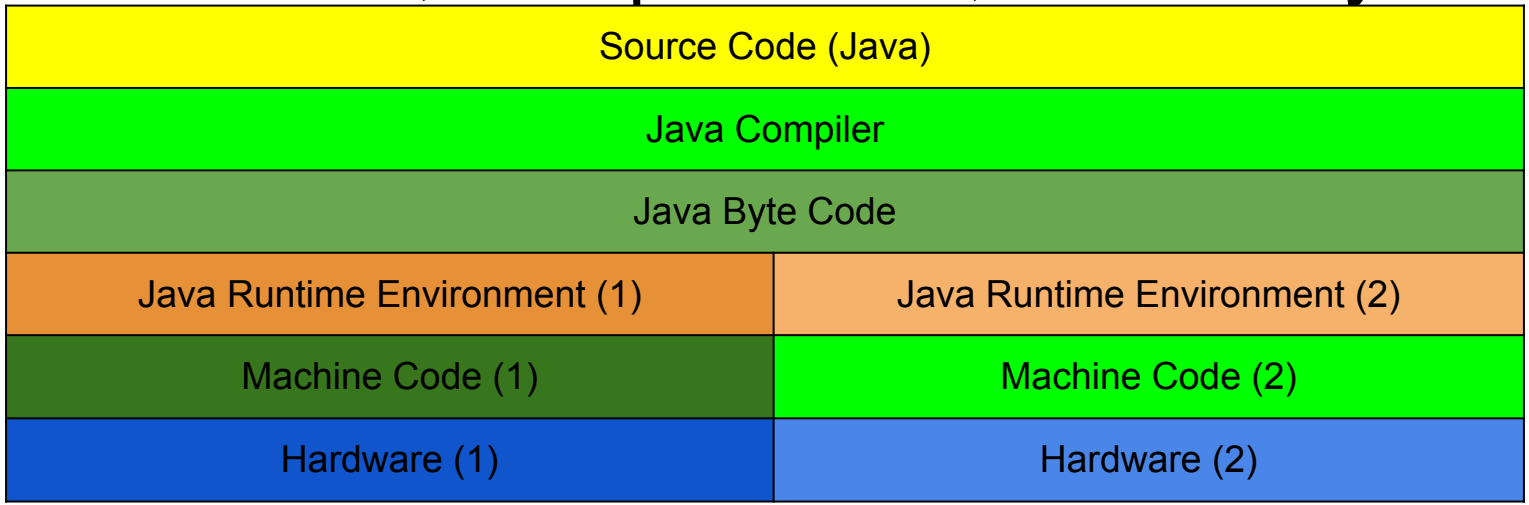
Origin & History of Java

- James Gosling invented Java in 1990s
- Write Once, Compile Once, Run Everywhere



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Origin & History of Java

- A Java Runtime Environment (JRE) created for every type of machine
- Java Source Code gets compiled into the Java program (bytecode)
- When the Java program is run, the JRE reads in and translates the bytecode into machine code

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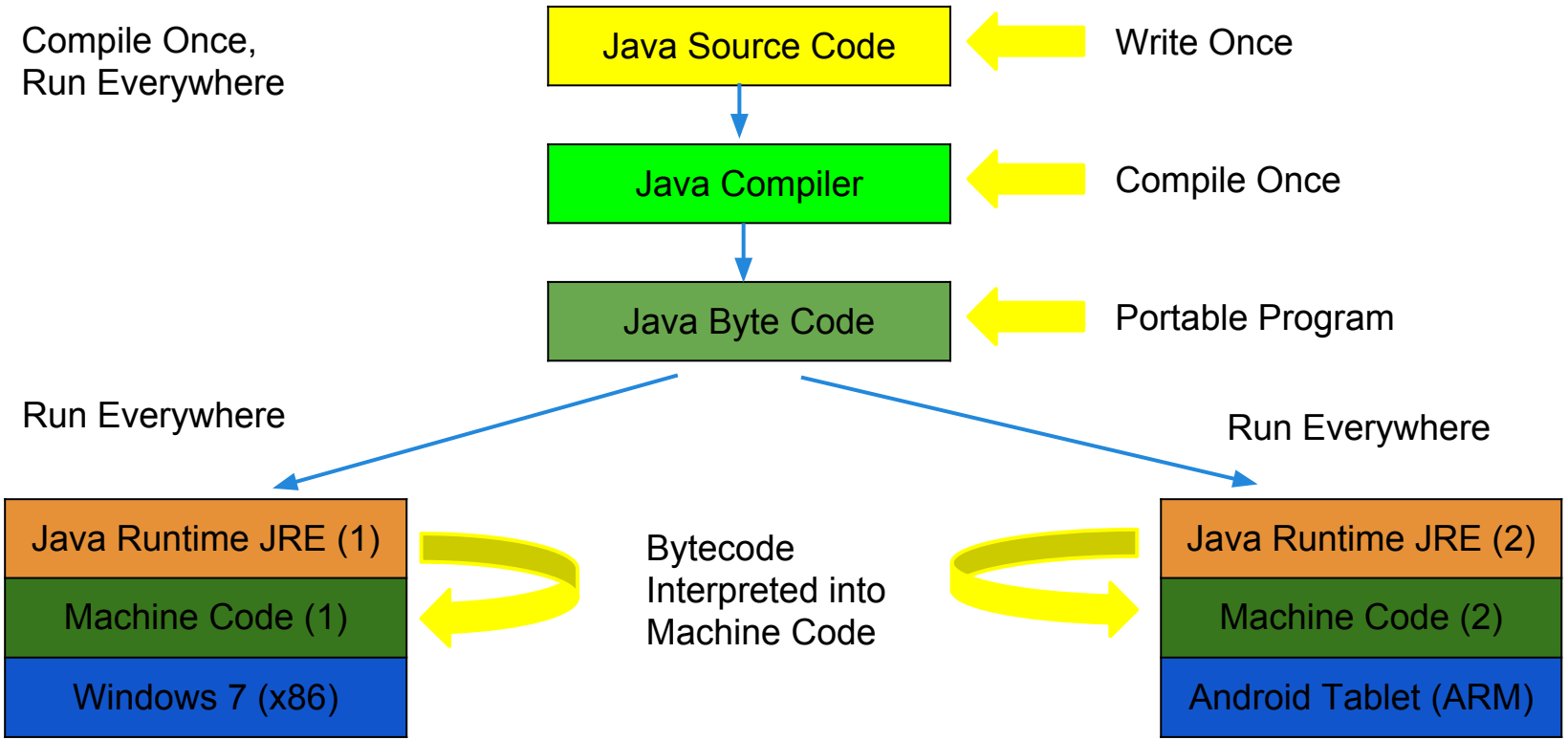

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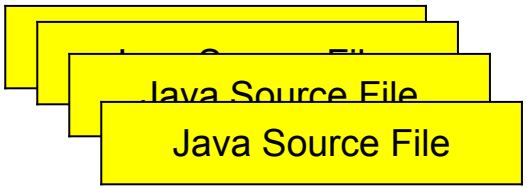
Java Compilation

- Java Source Code = 1 or more Java Source Files



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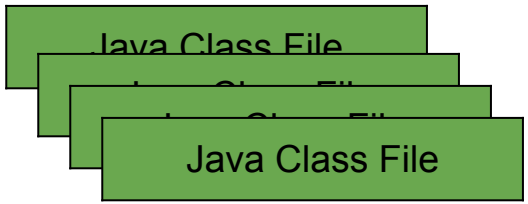
Java Compilation

- Java Byte Code = Class Files



Class Activity

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Open UX Term & Navigate To starterpack2

- Open UX Term
  - Start->System Tools->UXTerm
- Navigate to starterpack2
  - cd
  - cd Documents/tinkeracademy/Courses/TA-JAV-3
  - cd starterpack/starterpack2

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Compile C

- We will use the program **gcc** to compile C code
- **gcc** is a compiler provided by the GNU Foundation
- Navigate to the C folder under starterpack2
  - cd C
- Compile the HelloWorld.c source file to the machine code file
  - gcc -o HelloWorld HelloWorld.c
- This will generate the C Program HelloWorld

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Run C

- Running the C Program is simple
- Just invoke it on the command line
- ./HelloWorld
- The output is
  - `Hello World from C`

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Compile Java

- We will use the program **javac** to compile Java
- **javac** is a compiler provided by Oracle
- Navigate to the Java folder under starterpack2
  - cd Java
- Compile the HelloWorld.java source file to the class file
  - javac HelloWorld.java
- This will generate the HelloWorld Java program

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Run Java

- We will use the program **java** to run the Java Program
- java will start a new Java Virtual Machine to run your program
- java HelloWorld
- The output is
  - `Hello World from Java`

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Instructor Demo

- Run HelloWorld C in Mac OSX or Windows
  - cannot execute binary file
- Run HelloWorld Java in Mac OSX or Windows
  - Runs successfully
- Same Java Program runs on Linux and Mac OSX/Windows
- The C Program would need to be recompiled before running on MacOS or Windows