Getting started

Videogames Technology

Objectives

1. Understand the concept of programming language
2. Introduce interpreted and compiled languages
3. Describe the Java Virtual Machine
4. First contact with Java code

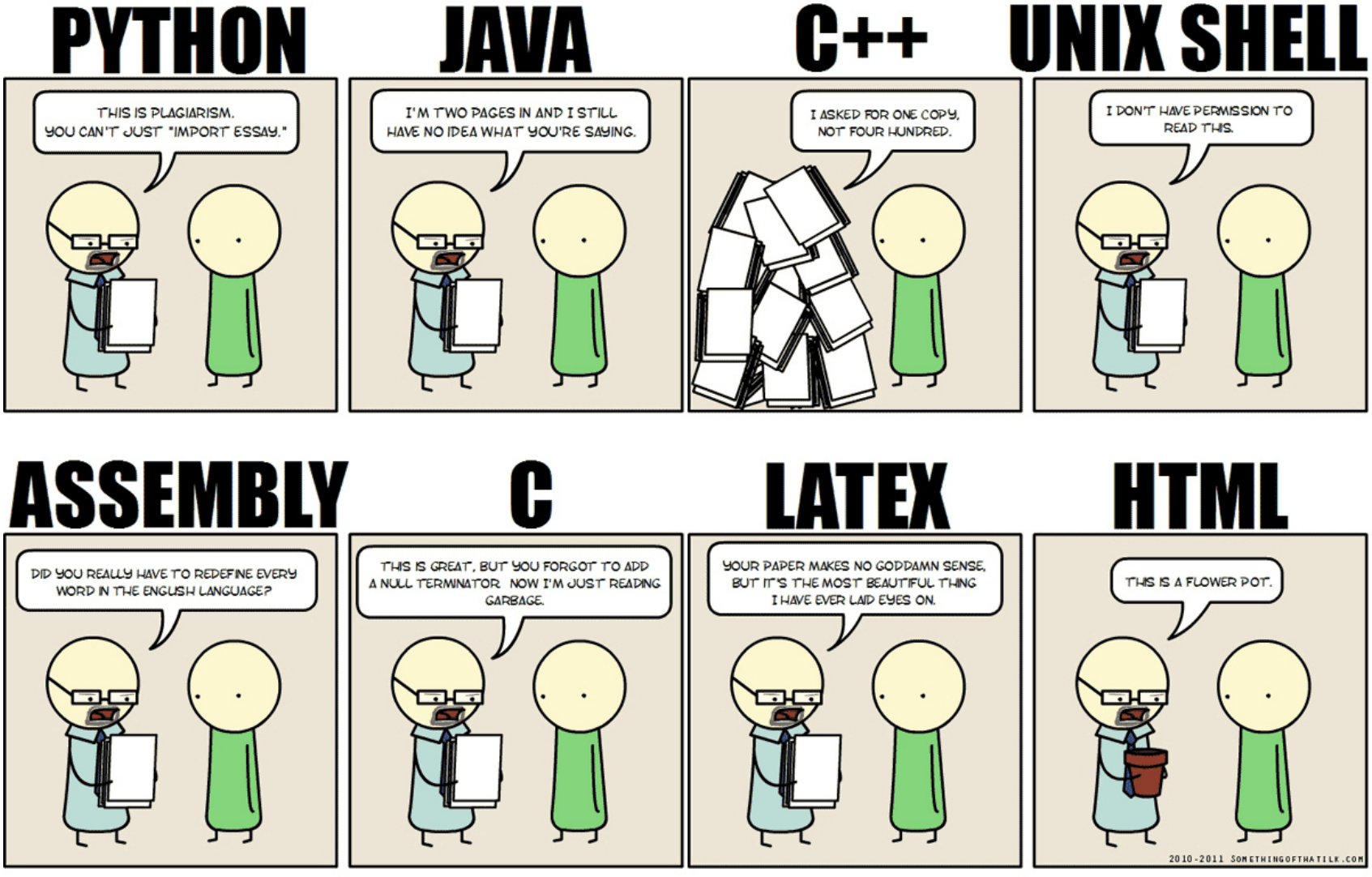
Bibliography

1. The Java™ Tutorials. Oracle. (Link)

Table of Contents

Programming languages (I)

Programming language: A formal language designed to communicate instructions to a machine



Programming languages (II)

Languages types

- *Compiled*: C, C++, Pascal, ...
- *Interpreted* (scripts): Python, Perl, PHP, ...

	Compiled	Interpreted
Speed	Fast	Slow
Development	Slow	Fast
Abstraction	Low/High	High
Flexibility	Low	High
Project size	Large	Small

Overview of Java

Why Java? (I)

- Widely used in the industry
  - Good point in your CV!
- Large number of domains
  - Desktop applications, servers, embedded systems, tablets, mobiles, ...
  - Videogames industry shifts to wider range of platforms
  - Java videogames for mobile platforms
- Clean and elegant object-oriented language
- High level (do more with less code)
- Syntax similar to other languages
- Availability of videogames source code

Overview of Java

Why Java? (II)

Advantages

- Device independent
- Safety
- Java standards
- Object-oriented
- Many applications

Disadvantages

- Slower execution
- Difficult device specific features
- JVM availability
- Huge ecosystem

Overview of Java

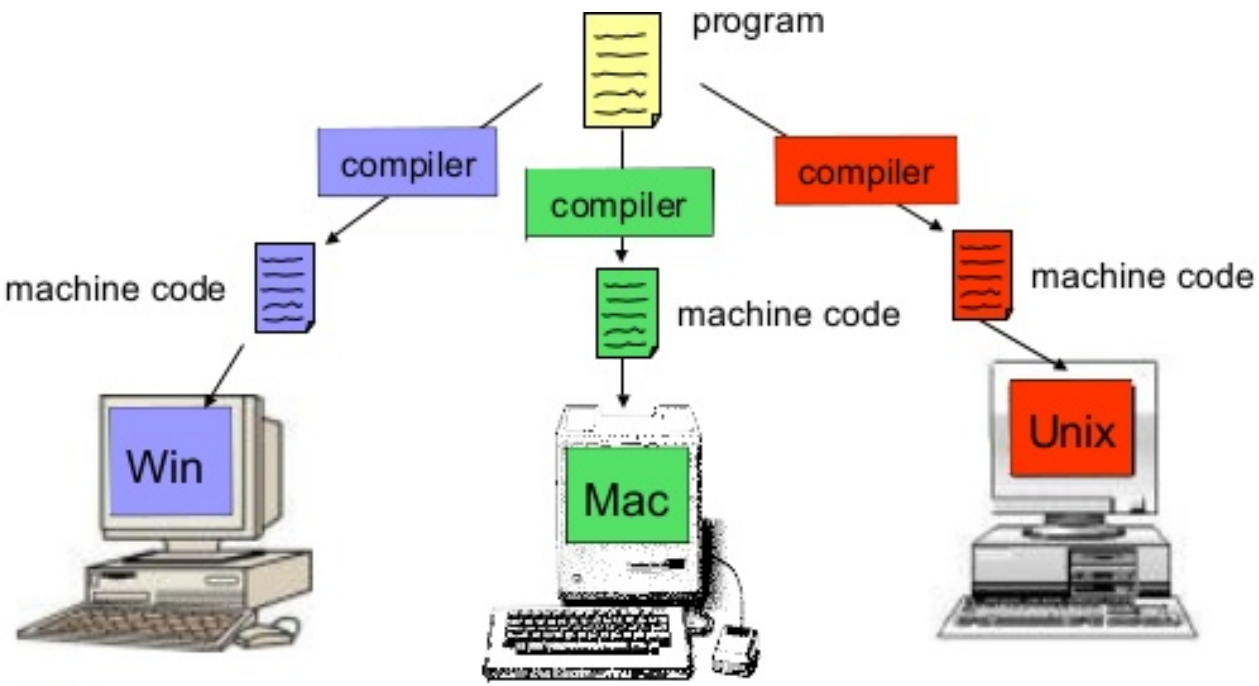
About the Java technology

- Java was created by Sun Microsystems
  - Now Java belongs to Oracle
- History
  - 1.0 (1996), 1.1 (1997), 1.2 (1998), 1.3 (2000), 1.4 (2002)
  - 5 (2004), 6 (2006), 7 (2011), 8 (2014)
- Java is a programming language and a platform
  - Programming language: Like C or C++
  - Platform: Where programs run, including hardware and operating system

Overview of Java

Java as programming language (I)

The standard way



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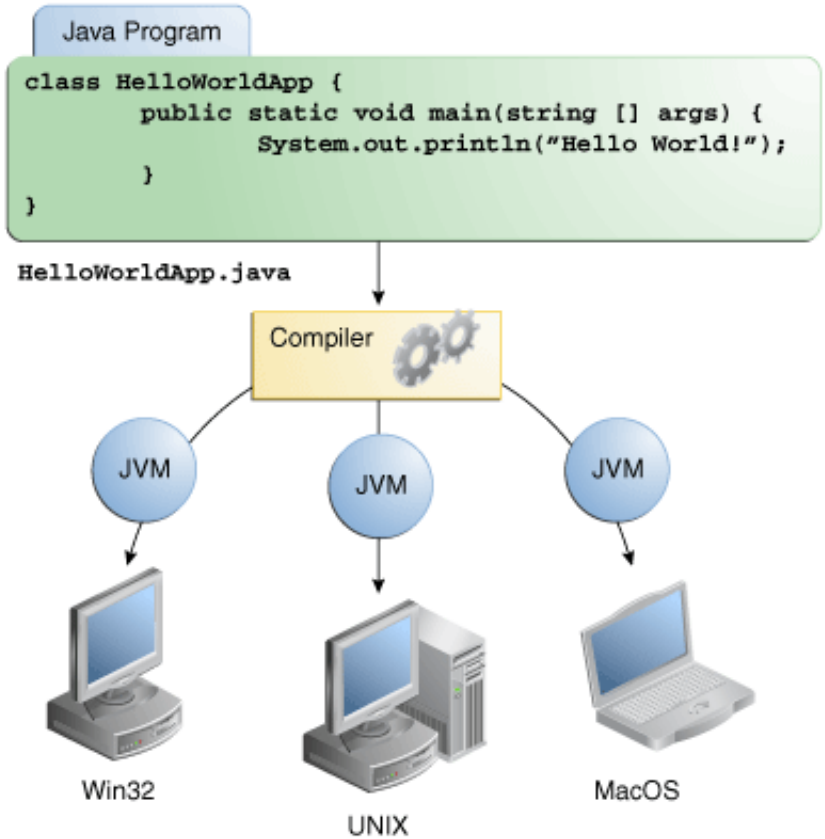
Overview of Java

Java as programming language (II)

The Java way: Write once, run anywhere



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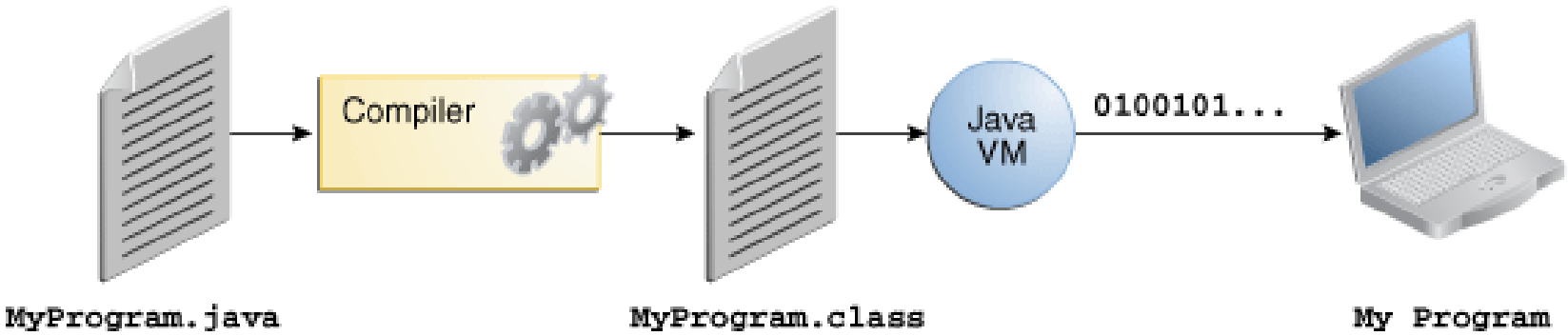
Overview of Java

Java as programming language (III)



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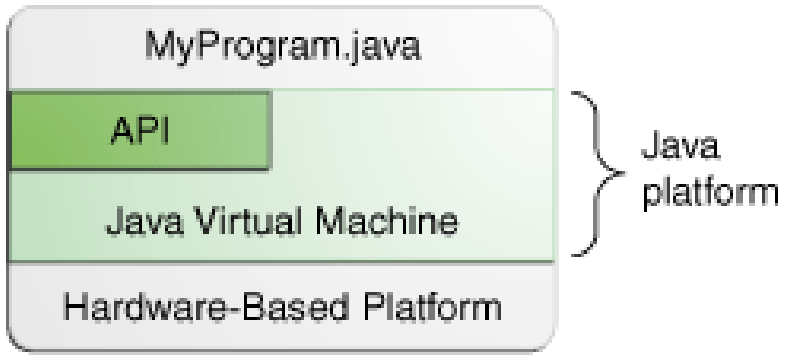
***.java:** Source code file
***.class:** Bytecode file
Bytecode: Machine language of the Java Virtual Machine (JVM)

Overview of Java

Java as platform

- A platform is all the required infraestructure to run a program
- Usually, hardware (CPU) + software (OS)
  - In Java all the platform uses to be software
- Two components: JVM (*Java Virtual Machine*) and API (*Application Programming Interface*)



Overview of Java

Acronyms

JSE: Java Standard Edition (Java Virtual Machine, JVM)
JDK: Java Developer Kit (Compiler + JVM)
J2EE: Java Enterprise Edition
J2ME (now Java ME): Java Micro Edition
Others: AWT, Swing, Ajax, EJB, HPJ, JAX, JDBC, JSP, Servlet, SAX, JDOM, ...

Hello World!

Hello world! (I)

HelloWorld.java

```
/**
 * It simply prints "Hello World !".
 */

class HelloWorld {
    public static void main (String [] args) {
        // Display the string
        System.out.println("Hello World!");
    }
}
```

Procedure:

1. Compile: `javac HelloWorld.java`
2. Run: `java HelloWorld`

Hello World!

Hello world! (II)

- Java is an evolution of C: Almost same syntaxis
- Entry point in `main()`
- `System.out.println()` prints a string
- // and /* ... */ are comments
- /** ... */ is a javadoc comment
- Java ignores the end of line
  - `;' marks the end of instruction
- Keyword `class` begins the class definition
  - Class name and file name *must* be equal!

Example

Hello.java

```
import java.util.Scanner;

class Hello {
  public static void main (String [] args) {
    String name;
    int age; // int means an integer variable
        Scanner input = new Scanner(System.in);

    System.out.println("Please, insert your name");
    name = input.next();
    System.out.println("Please, insert your age");
    age = input.nextInt();
    System.out.println("Hi, " + name);
    System.out.println("You are "+age+" years old");
  }
}
```

Example

Questions

1. How can you compile and run the program?
2. How would you join the two last lines?
3. Change the program to show the number of even years to 100
4. Change the program to read and show weight (float number)