

1. Introduction

Java

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The Java Technology Phenomenon

Java technology

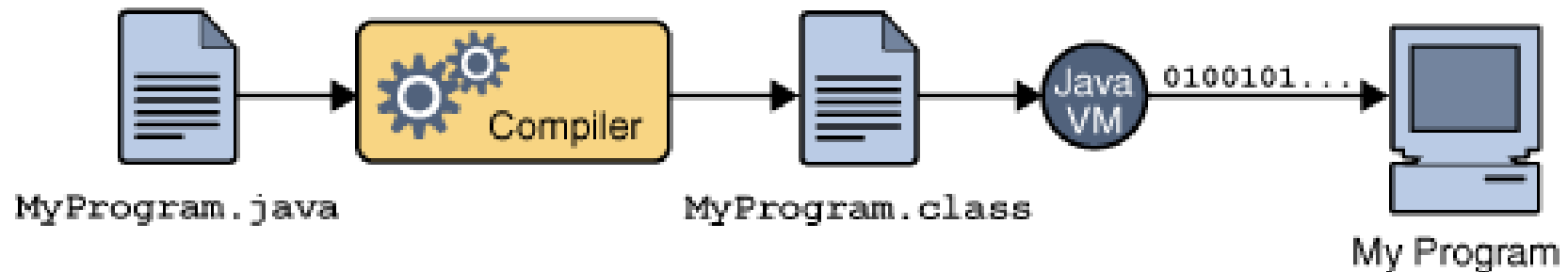
- ***Java technology*** is both:
 - A high-level programming language
 - A platform

The Java Programming Language

- All **source code** is first written in text files ending with the **.java** extension.
- The source files are then compiled into **.class** files by the **javac compiler**.
- A **.class** file contains **bytecodes** that is native to the machine language of the **Java Virtual Machine (Java VM)**.
- The **java launcher tool** then runs your application with an instance of the Java Virtual Machine.

The Java Programming Language

- An overview of the software development process:



The Java Programming Language

- Because the Java VM is available on many different platforms (operating systems), the same .class files are capable of running on:
 - Microsoft Windows
 - Solaris
 - Linux
 - Mac OS

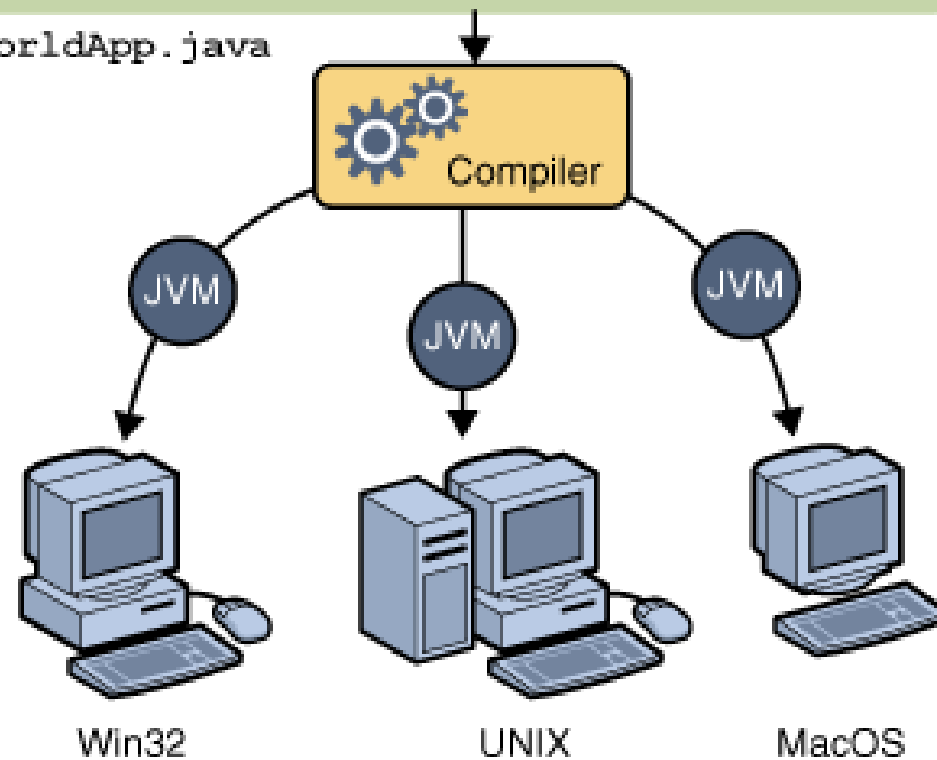
Getting Started

The Java Programming Language

Java Program

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

HelloWorldApp.java

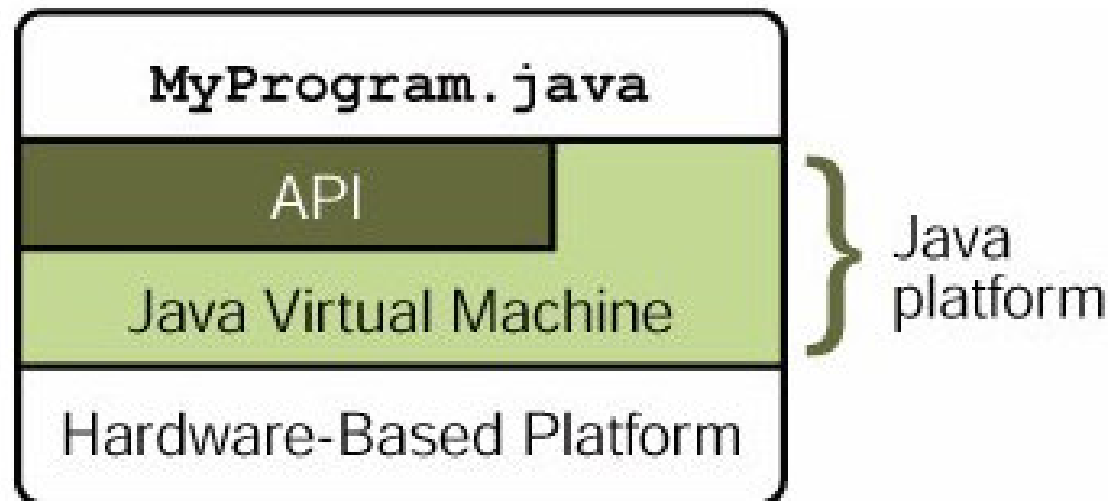


The Java Platform

- ***A platform*** is the hardware or software environment in which a program runs.
- Most platforms can be described as a combination of the operating system and underlying hardware.
- ***The Java platform*** is a software-only platform that runs on top of other hardware-based platforms.

The Java Platform

- The Java platform has two components:
 - The Java Virtual Machine
 - The Java Application Programming Interface (API)



The Java Platform

- The Java Virtual Machine is the base for the Java platform and is ported onto various hardware-based platforms.
- The API is a large collection of ready-made software components that provide many useful capabilities.
- API is grouped into libraries of related classes and interfaces; these libraries are known as *packages*.

Java applet

- The language used to create Web pages is called *Hypertext Markup Language* (HTML).
- Java code can be embedded in HTML documents in a capsule called a ***Java applet***.



Advantages of Java

Advantages of Java

- ***Get started quickly:*** it's easy to learn, especially for programmers already familiar with C or C++.
- ***Write less code:*** A program written in the Java programming language can be four times smaller than the same program written in C++.
- ***Write better code:*** Java platform let you reuse existing, tested code and introduce fewer bugs.

Advantages of Java

- ***Develop programs more quickly:*** The Java programming language is simpler than C++, and as such, your development time could be up to twice as fast when writing in it.
- ***Avoid platform dependencies:*** You can keep your program portable by avoiding the use of libraries written in other languages.
- ***Write once, run anywhere:*** Because applications written in the Java programming language are compiled into machine-independent, they run consistently on any Java platform.



References



References

- S. Zakhour, S. Hommel, J. Royal, I. Rabinovitch, T. Risser, M. Hoeber, **The Java Tutorial: A Short Course on the Basics**, 4th Edition, Prentice Hall, 2006.
- J. Sanchez, M.P. Canton, **JAVA Programming for Engineers**, CRC Press, 2002.



The End