Core Java 8

Lesson 05: Introduction to Java

Capgemini

Lesson Objectives

After completing this lesson, participants will be able to -

- Introduction to Java
- Features of Java
- Evolution in Java
- Developing software in Java

Java’s Lineage

C language was result of the need for structured, efficient, high-level language replacing assembly language.

C++, which followed C, became the common (but not the first) language to offer OOP features, winning over procedural languages such as C.

Java, another object oriented language offering OOP features, followed the syntax of C++ at most places. However, it offered many more features.

What is Java?

Java is an Object-Oriented programming language – most of it is free and open source!

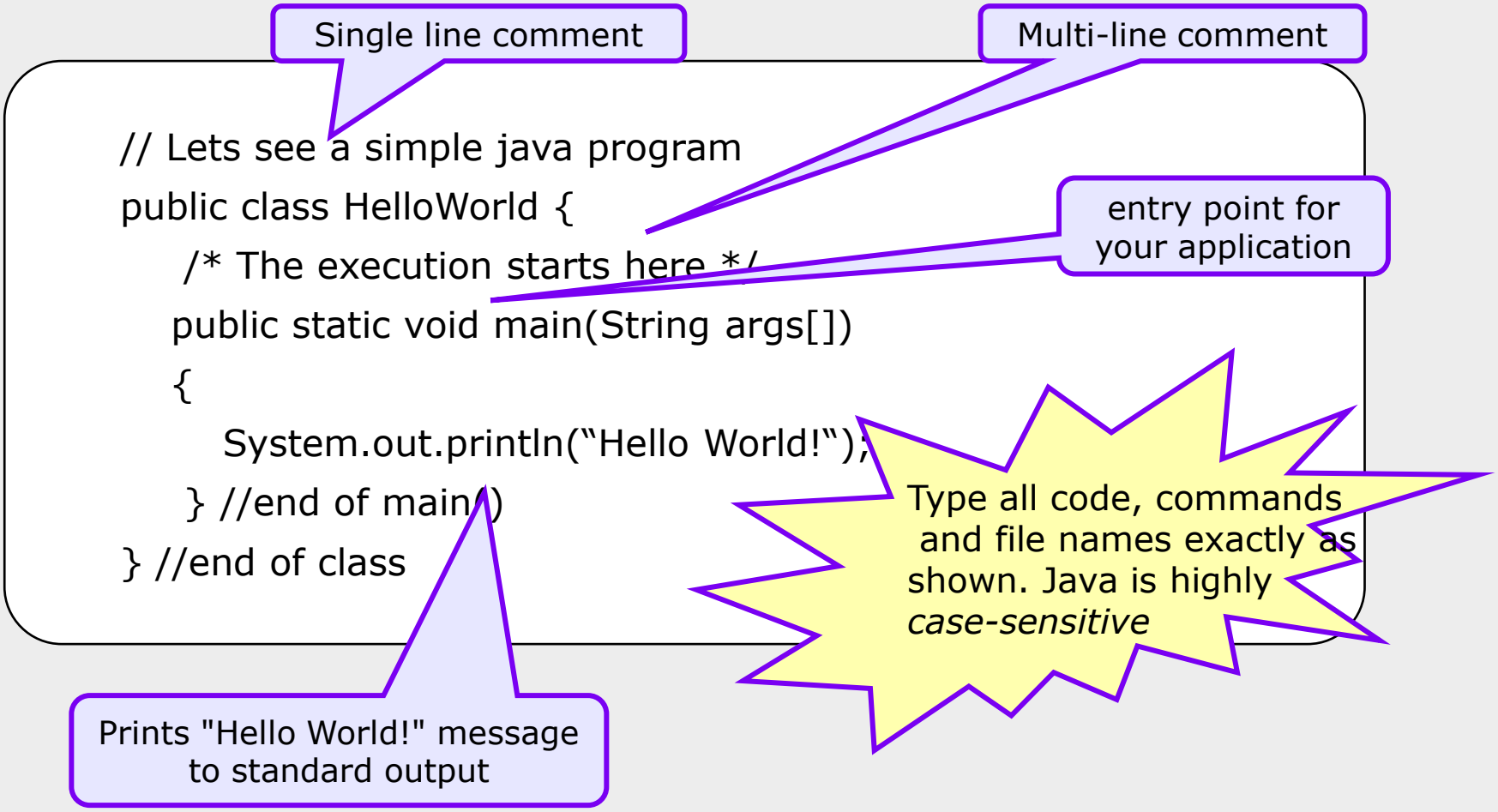
- It is developed in the early 1990s, by James Gosling of Sun Microsystems
- It allows development of software applications.
- It is amongst the preferred choice for developing internet-based applications

Java Language Features

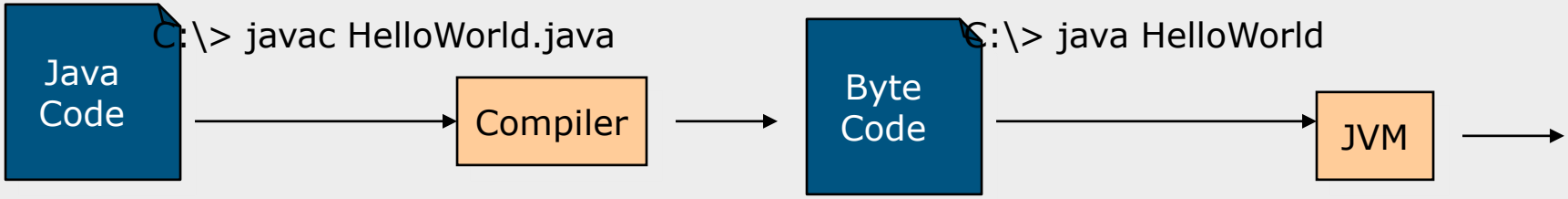
Java has advantages due to the following features:

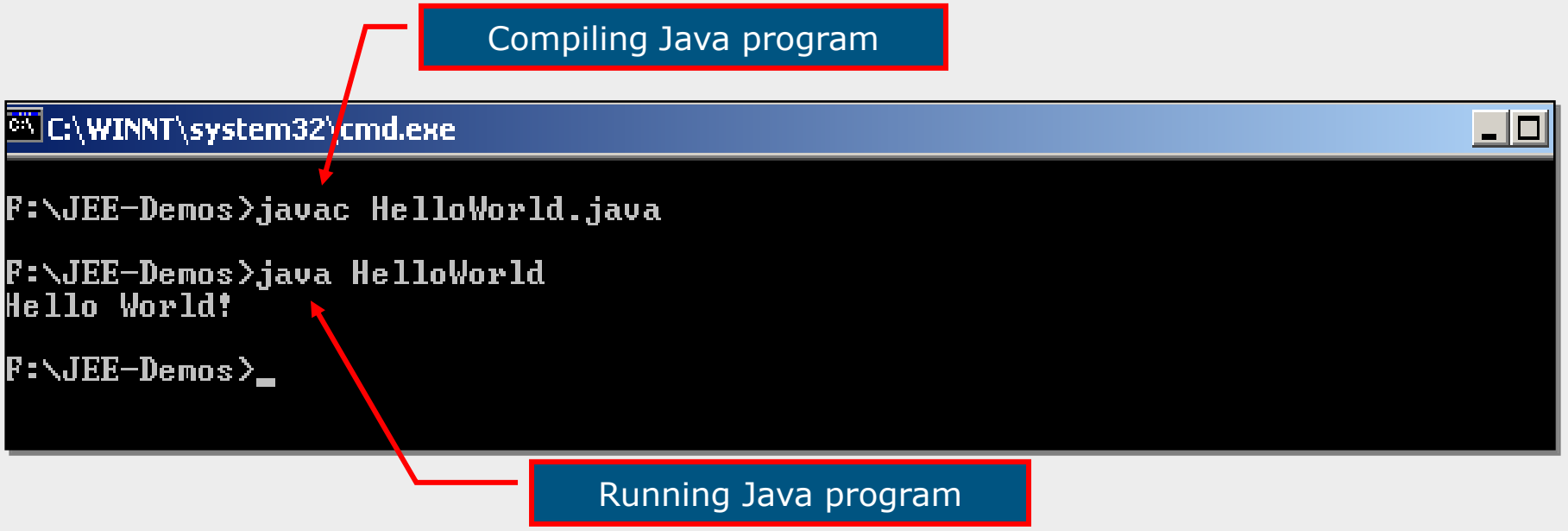
- Completely Object-Oriented
- Simple
- Robust: Strongly typed language
- Security
  - Byte code Verifier
  - Class Loader
  - Security Manager
- Architecture Neutral: Platform independent
- Interpreted and Compiled
- Multithreaded: Concurrent running tasks
- Dynamic
- Memory Management and Garbage Collection

A Sample Program



Java Development Process

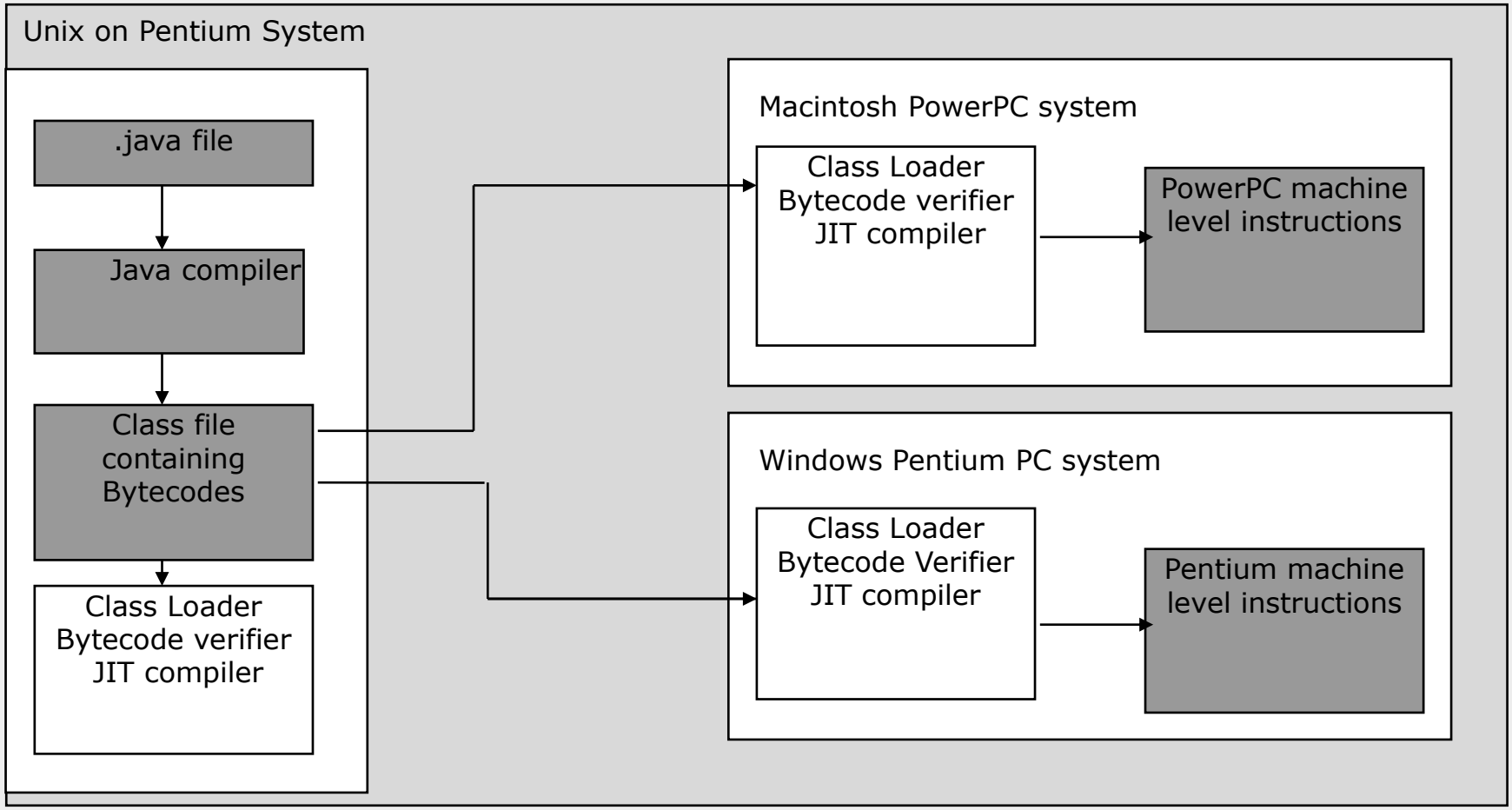




Demo

Creating and executing the First Java application

Platform Independence feature of Java



JRE versus JDK

JRE is the “Java Runtime Environment”. It is responsible for creating a Java Virtual Machine to execute Java class files (that is, run Java programs).

JDK is the “Java Development Kit”. It contains tools for Development of Java code (for example: Java Compiler) and execution of Java code (for example: JRE)

JDK is a superset of JRE. It allows you to do both – write and run programs.

Summary

In this lesson, you have learnt:

- Features of Java and its different versions
- How Java is platform Independent
- Difference between JRE and JDK
- Writing, Compiling, and Executing a simple program

Review Question

Question 1: A program written in the Java programming language can run on any platform because...

- **Option 1:** The JIT Compiler converts the Java program into machine equivalent
- **Option 2:** The Java Virtual Machine1(JVM) interprets the program for the native operating system
- **Option 3:** The compiler is identical to a C++ compiler
- **Option 4:** The APIs do all the work

Question 2: Java Compiler compiles the source code into ___ code, which is interpreted by ___ to produce Native Executable code.

Review Question

Question 3: Which of the following are true about JVM?

- **Option 1:** JVM is an interpreter for byte code
- **Option 2:** JVM is platform dependent
- **Option 3:** Java programs are executed by the JVM
- **Option 4:** All the above is true

Question 4 : _____ allows a Java program to perform multiple activities in parallel.

- **Option 1:** Java Beans
- **Option 2:** Swing
- **Option 3:** Multithreading
- **Option 4:** None of the above