Introduction

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What is Java?

- Java is a **programming language** and a **platform**.
- Platform Any hardware or software environment in which a program runs, known as a platform.
- Java was developed by *Sun Microsystems* in the year 1995.
- Now acquired by Oracle, James Gosling is known as the father of Java.
- Before Java, its name was *Oak*. Since Oak was already a registered company, so James Gosling and his team changed the name from Oak to Java.

Where It is Used?

- According to Sun, 3 billion devices run java. There are many devices where java is currently used. Some of them are as follows:
- 1. Desktop Applications such as acrobat reader, media player, antivirus etc.
- 2. Web Applications such as irctc.co.in, etc.
- 3. Enterprise Applications such as banking applications.
- 4. Mobile
- 5. Embedded System
- 6. Robotics
- 8. Games etc.

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Types of Java Applications

- Applications There are mainly 4 type of applications that can be created using java:
- 1) Standalone Application It is also known as desktop application or window-based application.
- AWT and Swing are used in java for creating standalone applications.
- 2) Web Application An application that runs on the server side and creates dynamic page, is called web application. Currently, servlet, jsp, jsf technologies are used for creating web applications in java.

Types of Java Applications(cont)

- 3) Enterprise Application An application that is distributed in nature, such as banking applications etc. It has the advantage of high level security, load balancing.
- In java, EJB is used for creating enterprise applications.
- 4) Mobile Application An application that is created for mobile devices.
- Currently Android and Java ME are used for creating mobile applications.

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Features of Java

- There is given many features of java.

- Simple
- Object-Oriented
- Platform independent
- Secured
- Robust
- Portable
- High Performance
- Multithreaded
- Dynamic

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Simple according to Sun

- Java language is simple because:
- syntax is based on C++ (so easier for programmers to learn it after C++).
- removed many confusing and/or rarely-used features e.g., explicit pointers, operator overloading, multiple inheritances, Explicit memory allocation etc.
- Hence it is one of the simple programming languages.

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Object oriented

- Object oriented means we organize our software as a combination of different types of objects that incorporates both data and behavior.
- Object-oriented programming(OOPs) is a methodology that simplify software development and maintenance by providing some rules.
- Basic concepts of OOPs are:
- 1.Object
- 2.Class
- 3.Inheritance
- 4.Polymorphism
- 5.Abstraction
- 6.Encapsulation

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Platform Independent

- Platform is the hardware or software environment in which a program runs.
- There are two types of platforms:
- Software-based and hardware-based.
- Java provides software- based platform.
- The Java platform differs from most other platforms in the sense that it's a software-based platform that runs on top of other hardware-based platforms.

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Platform independent(con..)

- Java code can be run on multiple platforms e.g. Windows, Linux, Solaris,Mac etc.
- Java code is compiled by the compiler and converted into bytecode.
- This bytecode is a platform independent code because it can be run on multiple platforms i.e. Write Once and Run Anywhere(WORA).

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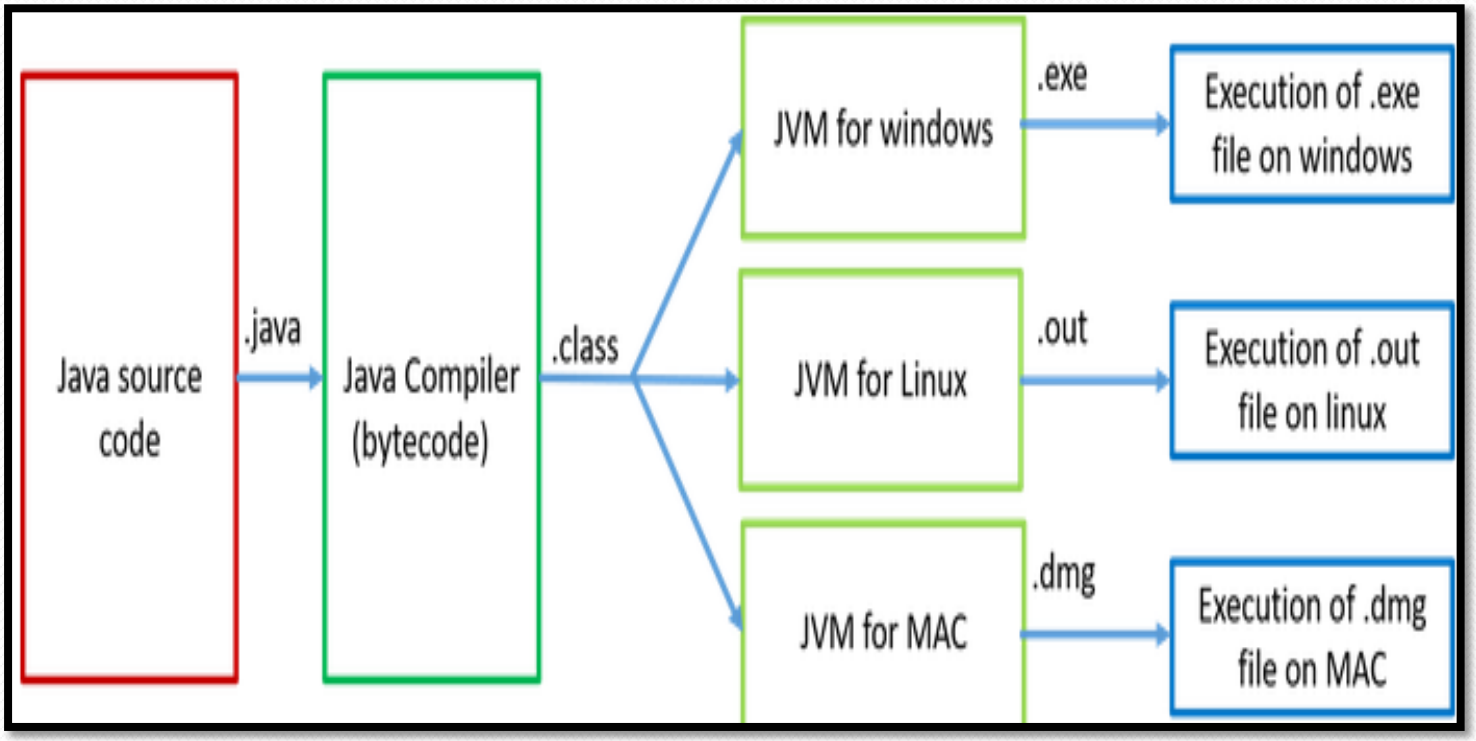
Platform independent(cont)



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Secured

- because:
- No explicit pointer
- Programs run inside virtual machine which is known as a sandbox.

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Robust

- Robust means strong.
- Java uses strong memory management.
- There are lack of pointers that avoids security problem.
- There is automatic garbage collection in java. There is exception handling and type checking mechanism in java.
- All these points makes java robust.

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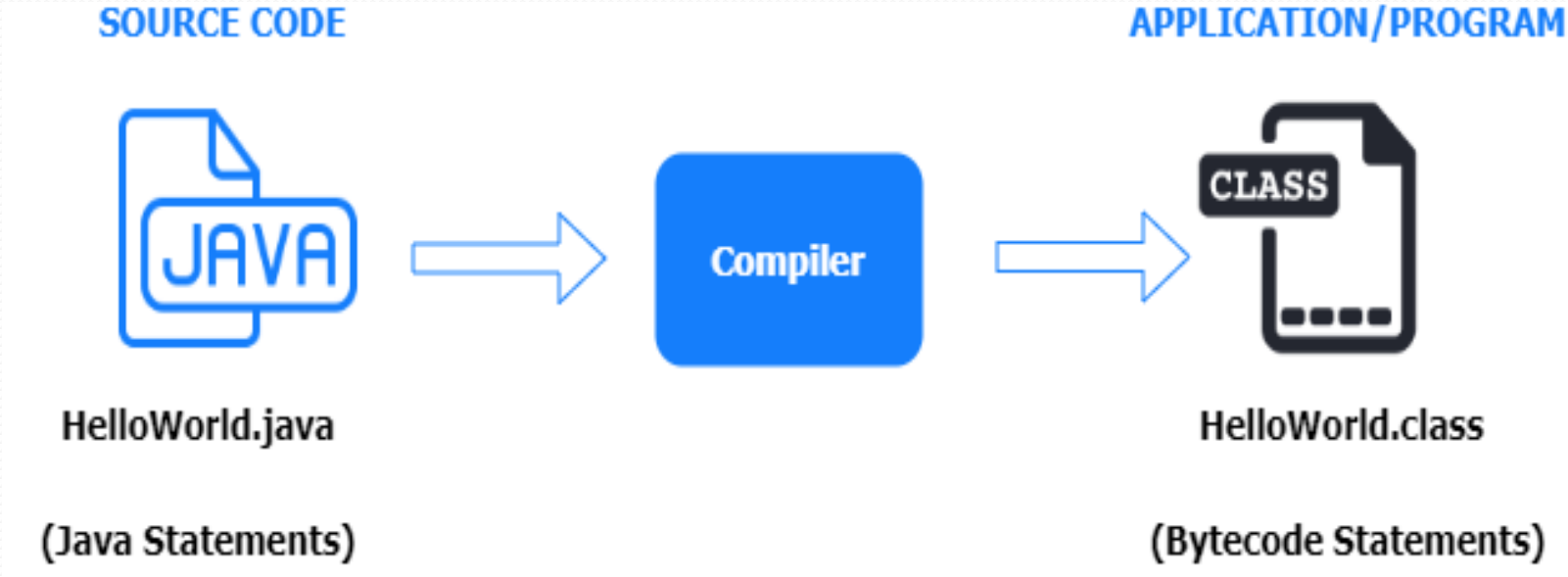
Portable

- You run Java bytecode on any hardware that has a Java interpreter.
- It doesn't require any implementation.



High Performance

- Java is faster than other traditional interpreted programming languages because Java bytecode is "close" to native code.
- It is still a little bit slower than a compiled language (e.g., C++).
- Java is an interpreted language that is why it is slower than compiled languages, e.g., C, C++, etc.

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Multi-threaded

- A thread is like a separate program, executing concurrently.
- We can write Java programs that deal with many tasks at once by defining multiple threads.
- The main advantage of multi-threading is that it doesn't occupy memory for each thread.
- It shares a common memory area.
- Threads are important for multi-media, Web applications, etc.

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Dynamic

- Java is a dynamic language.
- It supports the dynamic loading of classes.
- It means classes are loaded on demand.
- It also supports functions from its native languages, i.e., C and C++.
- Java supports dynamic compilation and automatic memory management (garbage collection).

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Why use java?

- ✓Easy to Learn and use
- ✓Portable
- ✓Secure, Fast and Powerful
- ✓Open source and free
- ✓Works on different platform

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First Example Java Program

- To create a simple Java program, we need to create a class that contains the main method.
- Let's understand the requirement first.
- For executing any Java program, the following software or application must be properly installed.

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Con..

- ✓ Install the JDK if you don't have installed it.
- ✓ Set path of the jdk/bin directory.
- ✓ Create the Java program
- ✓ Compile and run the Java program

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Creating Hello World Example

- **Let's create the hello java program:**

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

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Any Question?

Thank You