



Java Features

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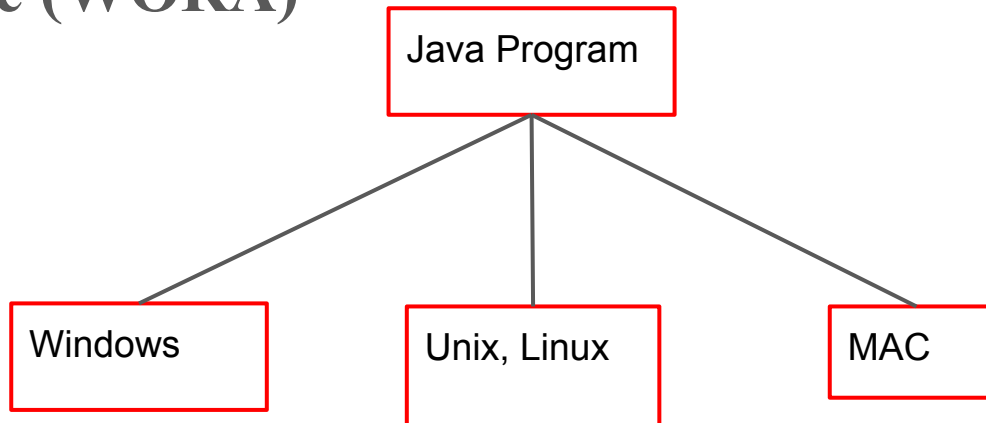
1. **Simple**
2. **Platform Independent**
3. **Architectural-Neutral**
4. **Portable**
5. **Secure**
6. **Object Oriented**
7. **Multithreaded**
8. **Robust**
9. **Distributed**
10. **Interpreted**
11. **High Performance**
12. **Dynamic**

Java is Simple

- **Java is very simple and easy to learn**
- **Java is partially modeled on C++, but greatly simplified and improved.**
- **The end user who is familiar with C and C++, requires less efforts in learning java.**
- **Most of the complex and confusing features of other languages(C,C++) like pointers, multiple inheritance....
Removed from java**

Platform Independent

If we write java program once, we can run on any platform. I.e java follows **Write Once Run Anywhere** principle (WORA)



You can run same java programs on different platform

Architectural-Neutral

- **Java programs never communicates with the platform directly.**
- **Changes and upgrades in operating system, processors and system resources will not force any changes in java programs.**

Portable

We can carry the java byte code to any platform without making any changes.

For Example

Just like Mobile number portability in India from one service provider to another service provider without changing the mobile number.

Secure

Java program never communicates directly with the machine. First converted into byte code and then converted into machine code by the JVM

If the bytecode contains any problem or if it is not properly formatted, then JVM won't allow that code to run and will raise VerifyError. Internally inside JVM, Bytecode verifier is responsible to verify byte code

So java programs won't cause any problem to the system.

Object Oriented

Java is object Oriented Programming Language like C++. Most of the times in java we have to handle everything in terms of Object.

One of the central issues in software development is how to reuse code. Object-oriented programming provide great flexibility, modularity, clarity, and reusability through encapsulation, inheritance, and polymorphism.

Multithreaded

- In the case of multithreading, multiple threads can run simultaneously and can perform specific tasks simultaneously, so that performance of the application will be improved.
- Java provides inbuilt support for multithreading by providing a rich API.
- Java won't parallelized code execution automatically. It provides libraries, by using those we have to write code for parallel execution.

Robust

- **Java is strongly typed language. Compiler will check each and every declaration and assignments at compile time only for type compatibility. If any problem with respect to the types, then at compile time only we can identify the problem.**
- **Java provides garbage collector for automatic memory management hence there is no chance of memory related problems.**
- **Java provides inbuilt Exception handling, which prevents abnormal termination of the program at runtime.**
- **Java is platform independent and it can run on any platform.**

Distributed

If the application is distributed across multiple machines (JVMs), such type of application is called Distributed Application.

Java provides inbuilt support for Distributed programming with RMI, EJB etc.

Compiled and Interpreted

Java is both Compiled and Interpreted Programming language. First java compiler compiles java code and generates machine independent Byte Code

Runtime JVM interprets this byte code into machine code and executes that machine code.

High Performance

Java is relatively faster than traditional interpreted languages, since byte code is “close” to native code. But java is still somewhat slower than C or C++.

Dynamic

In the case of java programs, all .class files won't be loaded at the beginning.

At runtime if JVM required any class then only the corresponding .class file will be loaded (Dynamic Loading).

Quiz

Q. Which of the following is TRUE?

- A) Java is Platform Independent, Portable, Object-Oriented, Multithreaded and Distributed Programming Language.**
- B) Java is Platform Dependent, Portable, Object-Oriented, Multithreaded and Distributed Programming Language**
- C) Java is Platform Independent, Portable, Procedure-Oriented, Multithreaded and Distributed Programming Language.**
- D) Java is Platform independent, Portable, Object Oriented, Multithreaded and Centralized programming language**

Q. Which of the following are features of java?

- A) Object- Oriented**
- B) Multithreaded**
- C) Portable**
- D) Distributed**
- E) Platform Dependent**
- F) Procedural and function Oriented**
- G) Compiled into Machine Executable Code.**

Q. Consider the following Lines:

L1: Java is Dynamic because the classes will be loaded on demand whenever required.

L2: Java is Static because all required classes will be loaded at the beginning and then execution will be started.

Which of the above lines are TRUE?

- A) Only L1**
- B) Only L2**
- C) None of L1 and L2**
- D) Both L1 and L2**