



# FEATURES OF JAVA

## DOCUMENTATION

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# **FEATURES OF JAVA**

- I. Known as Java buzzwords.
- II. Objective of Java language:
  - Portable
  - Simple
  - Secure programming language
- III. Important features of Java

## 1.Simple

- Easy to learn.
- Syntax is simple (based on C++).
- Easy to understand.
- Removed complicated and rarely used features like pointers, operator overloading.

## 2.Object-oriented

- Java is an Object-oriented programming language.
- Object-oriented programming (OOPs) is a methodology that simplifies software development and maintenance by providing some rules.
- Basic concepts of OOPs:
  - Object
  - Class
  - Abstraction
  - Inheritance
  - Encapsulation
  - Polymorphism

## 3.Platform Independent

- Java is a write once, run anywhere language.
- A platform is the hardware or software environment in which a program runs.
- Two types of platforms:
  - Software based
  - Hardware based
- Java provides a software-based platform.
- Java code is compiled by the compiler and converted into bytecode.
- Bytecode is a platform-independent code because it can be run on multiple platforms. (WORA).
- Java code can be executed on multiple platforms

Note: WORA- Write Once and Run Any.

#### 4. Secured

- With Java, we can develop virus-free systems.
- Java is secured because:
  - No explicit pointer.
  - Java programs run inside a virtual machine sandbox.
- Java language provides securities by default:
  - Class loader: Used to load Java classes into the Java Virtual Machine dynamically.
  - Bytecode Verifier: It checks the code fragments for illegal code that can violate access rights to objects.
  - Security Manager: It determines what resources a class can access such as reading and writing to the local disk.

#### 5. Robust

- It uses strong memory management.
- A lack of pointers that avoids security problems.
- There are exception handling and the type checking mechanism in Java.

#### 6. Architecture-Neutral

- No implementation dependent features.  
For example: the size of primitive types is fixed.
- Occupies 4 bytes of memory for both 32 and 64-bit architectures in Java.

#### 7. Portable

- Facilitates you to carry the Java bytecode to any platform.
- It doesn't require any implementation.

#### 8. High Performance

- Faster. (compared to other interpreted programming languages.
- Java bytecode is "close" to native code.
- Java is an interpreted language that is why it is slower than compiled languages, e.g., C, C++, etc.

#### 9. Distributed

- Facilitates users to create distributed applications in Java.  
RMI and EJB are used for creating distributed applications.
- To access files by calling the methods from any machine on the internet.
- Helpful when we create large projects.

## 10. Multithreaded

- A process of executing multiple threads simultaneously.
- It doesn't block the user because threads are independent and you can perform multiple operations at the same time.
- Threads are independent, so it doesn't affect other threads if an exception occurs in a single thread.

## 11. Dynamic

- 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).