

# Java features

## Buzz words

### 1. Simple and familiar

- it is simple because of its coding style is very clean & easy to understand
- familiar because it has base of familiar languages like C & C++ & contain many features of these
- it removes the drawbacks, complexities and confusing elements of C/C++

### 2. Compiled & Interpreted

- Java combines both these approaches thus making it a 2 stage system.
- it integrates the power of compiled languages with the flexibility of interpreted languages
- Java compiler (Javac) compiles the Java source code into the bytecode
- Java virtual machine then executes this bytecode which is executable on many OS & is portable

### 3. Platform independent

- Being platform independent means a program compiled on one machine can be executed on any machine in the world without any change
- Java achieves platform independence by using the concept of the BYTE Code

### 4. Portable

- portability of Java comes from architecture - neutrality
- Java bytecode can run on any hardware that has a compliant JVM which can convert the bytecode according to machine

- In Java the size of primitive data types is machine independent which make Java programs portable among different platforms
- Any changes & updates made in OS processors & system resources will not enforce any changes in Java programs

### 5. Architectural Neutral

- the program written on one platform or OS is independent of other platform or environments & can run on any other OS without recompiling them.
- It is based on write Once run anywhere (WORA) or write once run everywhere (WORE) approach.
- This feature is very useful when we develop applets or download applications from the internet

### 6. Object Oriented

- it strongly supports the concept of Object Oriented programming due to which it is called a pure object oriented language
- it supports major Object oriented programming features like Encapsulation, Abstraction, & inheritance.
- Almost everything in Java is an object
- All programs & data live within objects & classes



### Exception handling -

Handle exception appropriately using try catch block. If we catch generic exception catch the specific exception. Log exception with meaningful messages.

Explore the various IDE's a variable for implementing Java.

Source code.

### → Eclipse -

Eclipse is a widely used open source IDE with extensive support for the Java Development

It offers feature like code completion, debugging, refactoring and wide range of plug in

### → IntelliJ IDEA

IntelliJ IDEA developed by JetBrains Smart code is a powerful and feature rich commercial IDE

IntelliJ IDEA is known for its user friendly interface and productivity enhancing feature.



## Learn and Understand the Coding Standards

### For Java Programming.

#### → Naming Convention.

Classes - Use camelcase starting with a uppercase  
Method - Use camelcase starting with a lowercase  
Variable - Use camelcase starting with a lowercase  
Constants - Use uppercase letter with underscores

#### → Package Structure -

Follow the reverse domain naming convention for packages  
Avoid using the wildcard import and instead import what is necessary only.

#### → Indentation and Formatting -

Use 4 space for each level of indentation limit line length to 80-120 character for better readability consistently use the curly braces even for a single statement blocks.

#### → class structure -

Place class variable at the top of the class  
Order class element logically  
Follow the principle of Encapsulation.



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ing and Design with Java



### → Typing -

Java - Statically typed language meaning the variable type must be declared at compile time.

Python - Dynamically typed language allowing variable to be assigned ~~without~~ explicit type declaration.

### → Execution -

Java - Compiled language that translates the source code to bytecode which runs on the Java virtual machine.

Python - Interpreted language where source code is executed line by line by the python interpreter.

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J Developer -

Oracle JDeveloper is an IDE provided by Oracle for Java and other Language

JDeveloper is commonly used for Developing application on the Oracle platform.

→ Jupyter Notebook with Java kernel -

Jupyter Notebook is a popular open source web application for interactive Computing with the use of the Java kernel Jupyter Notebook can be employed for Java Development allowing for interactive Code Execution and visualization.

Compare and Understand the Java Programming Language with Python

→ Syntax -

Java - require explicit declaration of data type strict Syntax and the use of Semi-colon to terminate statement

Python - Use a more concise and readable Syntax with dynamic type and indentation to denote code block.



## 7. Robust

- Java is capable of handling runtime errors, supports automatic garbage collections & exception handling & avoids explicit pointer concepts
- it has strong memory management systems
- it helps in eliminating errors as it checks the code during both compile & runtime
- Exceptional handling identifies & removes runtime errors
- any runtime error when encountered the program gets terminated.

## 8. Secure

- it not only verify all the memory access but also ensures that no thread of virus communicated through an applet
- the absence of pointers in Java ensures that programs cannot give access to memory locations without proper authorization.
- Java is a more secure language as compared to C/C++, as it does not allow a programmer to explicitly create pointers
- programs run in a virtual machine sandbox - A separate environment that allows users to execute their applications without affecting the underlying system.
- It has a bytecode verifier that checks the code fragments for any illegal code that violates the access right.

## 9. Distributed

- Java is distributed because it encourages users to create distributed application

- In Java a program can be split into many parts & store these parts on different computers
- a Java programmer sitting on a machine can access another program running on the other machine
- This feature is very helpful in developing large projects

## 10. multi-threaded & interactive

- multi-threaded means handling multiple tasks simultaneously or executing multiple functions of the same program in parallel

## 11. High Performance

- it provides high performance with the use of JIT Just in time compiler. This saves time and makes it more efficient
- the illusion of multithreading enhances the overall execution speed of Java

## 12. Dynamic & Extensible

- highly dynamic as it can adapt to its evolving environment
- even supports the functions written on other languages such as C/C++ to be written in java programs.

These functions are called native methods

These methods are dynamically linked at runtime.