

## The Spoken Tutorial Project

- Self-explanatory: uses simple language
- Audio-video: uses multisensory approach
- Small duration: has better retention
- Learner-centered: learn at your own pace
- Learning by doing: learn and practise simultaneously
- Empowerment: learn a new **FLOSS** (Free/Libre and Open Source Software)

## Target Group

- Students- High School and College
- Working professional- Software users, developers and trainers
- Research scholars
- Community at large

## Workshops

The Spoken Tutorial Project Team conducts workshops on Java and other FLOSS using spoken tutorials and gives certificates to those who pass an online test.

For more details, please visit <https://spoken-tutorial.org>

## Forum

We have developed a beginner friendly Forum to answer specific questions pertaining to any part of a particular tutorial.

For more details, please visit <https://forums.spoken-tutorial.org>.

The Spoken Tutorial Project is funded by the National Mission on Education through Information and Communication Technology, Ministry of Human Resource Development, Government of India.

## Contact us

Email: [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)  
Website: <https://spoken-tutorial.org>

Forum help available to all learners

Content available in 22 Indian languages



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**Spoken Tutorial**

<https://spoken-tutorial.org>



Scan the QR code to visit Spoken Tutorial website



National Mission on Education through Information and Communication Technology (NMEICT)

[www.sakshat.ac.in](http://www.sakshat.ac.in)

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## Introduction

- Java is the most popular class-based, object-oriented, high-level programming language.
- Developed by James Gosling at Sun Microsystems and released in 1995 as a core component of Sun Microsystems' Java platform.
- Derives much of its syntax from C and C++.
- Is typically compiled to bytecode (class file). It can be run on any Java Virtual Machine (JVM) regardless of the architecture.
- Is specifically designed to have few implementation dependencies.
- Is Intended to let application developers write a code that runs on one platform & does not need to be recompiled to run on another.

## Java has characteristics of Object-Oriented languages

- **Inheritance:** Creating new classes & extending them to reuse the existing code and adding new features as needed.
- **Encapsulation:** combining the information and providing the abstraction.

- **Polymorphism:** Providing different functionality by the functions having the same name, based on the signatures of the methods.
- **Dynamic binding:** Providing maximum functionality to a program about the specific type at runtime.

## Features

### Platform independence:

Key feature of Java language is write-once-run-anywhere (WORA) concept. With Java, you can run the code written on any system.

### Simplicity:

Programs are easy to write and debug. Java provides a bug-free system due to strong memory management.

**Portability:** Java feature write-once-run-anywhere makes it portable, provided that the system has an interpreter for JVM. Also, Java has standard data size irrespective of the OS or the processor.

**Performance:** Uses native code and lightweight process called threads. The advance version of JVM uses adaptive and just-in-time compilation technique to improve the total performance.

**Distributed:** Widely used protocols like HTTP and FTP are developed in Java. Internet programmers can call functions on these protocols and can access the files from

any remote machine on the internet, rather than writing codes on their local system.

### Secure:

- Programs in Java run under an area known as the sandbox.
- Security manager determines the accessibility options of a class like reading and writing a file to the local disk.
- Uses public key encryption system to allow the java applications to transmit over the internet, in a secure and encrypted form.
- The bytecode verifier checks the classes after loading.

### Robust:

Java has

- Strong memory allocation.
- Automatic garbage collection mechanism.
- Powerful exception handling.
- Type-checking mechanism.
- A compiler that checks the program for any errors and interpreter checks any runtime errors and makes the system secure from crashes.