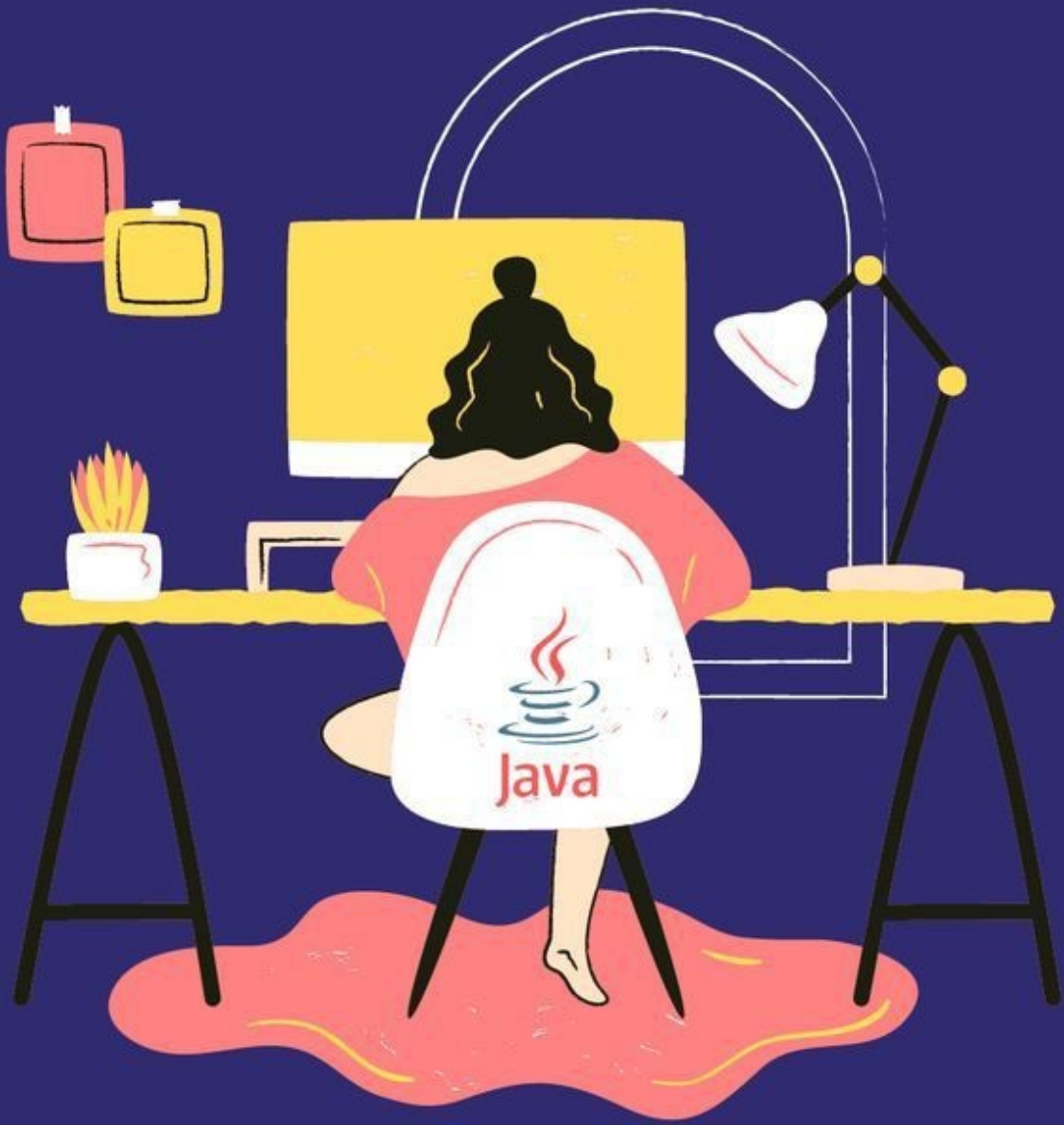
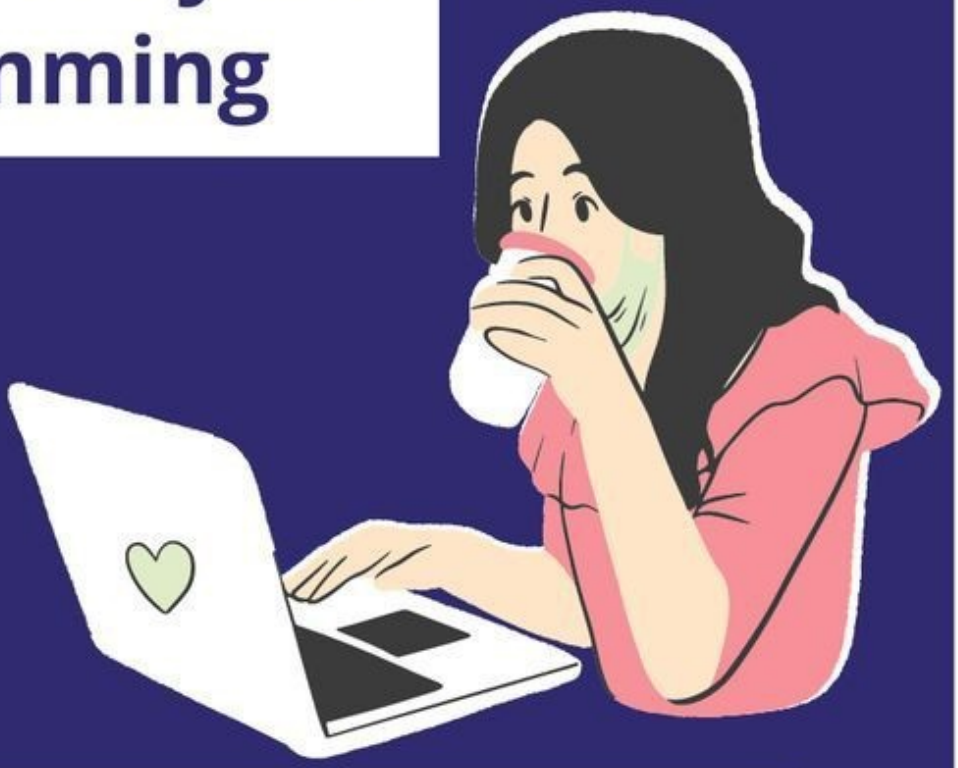
Java Programming – (Introduction)



Features of Java Programming



- Compiled and Interpreted
- Platform-Independent and Portable
- Object-Oriented
- Robust and secure
- Distributed
- Familiar, simple, and small
- Multithreaded and Interactive
- High Performance
- Ease of Development
- Dynamic and Extensible

DATA ABSTRACTION IN JAVA

Data abstraction in Java refers to the ability to make a class abstract in Object-Oriented Programming. The practice of identifying only the required attributes of an object while discarding the irrelevant information is known as data abstraction in Java. The features and behaviors of an object assist to distinguish it from other things of the same sort, as well as classify and group them.

What is a 'Class' in Java programming?

A class can be defined as a blueprint or a prototype that outlines the actions and states that an object of its type can support. In other words, we can say that a class is a template from which individual objects are built-in Java language.

What is Polymorphism in Java?

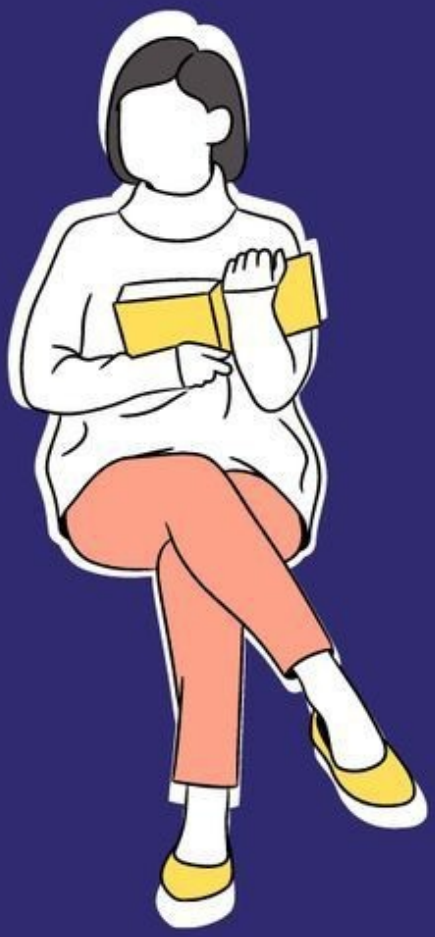
Polymorphism in Java can be defined as the ability of an object to take on many forms. The most common use of polymorphism in OOP occurs when a parent class reference is used to refer to a child class object.

Types of Polymorphism in Java?

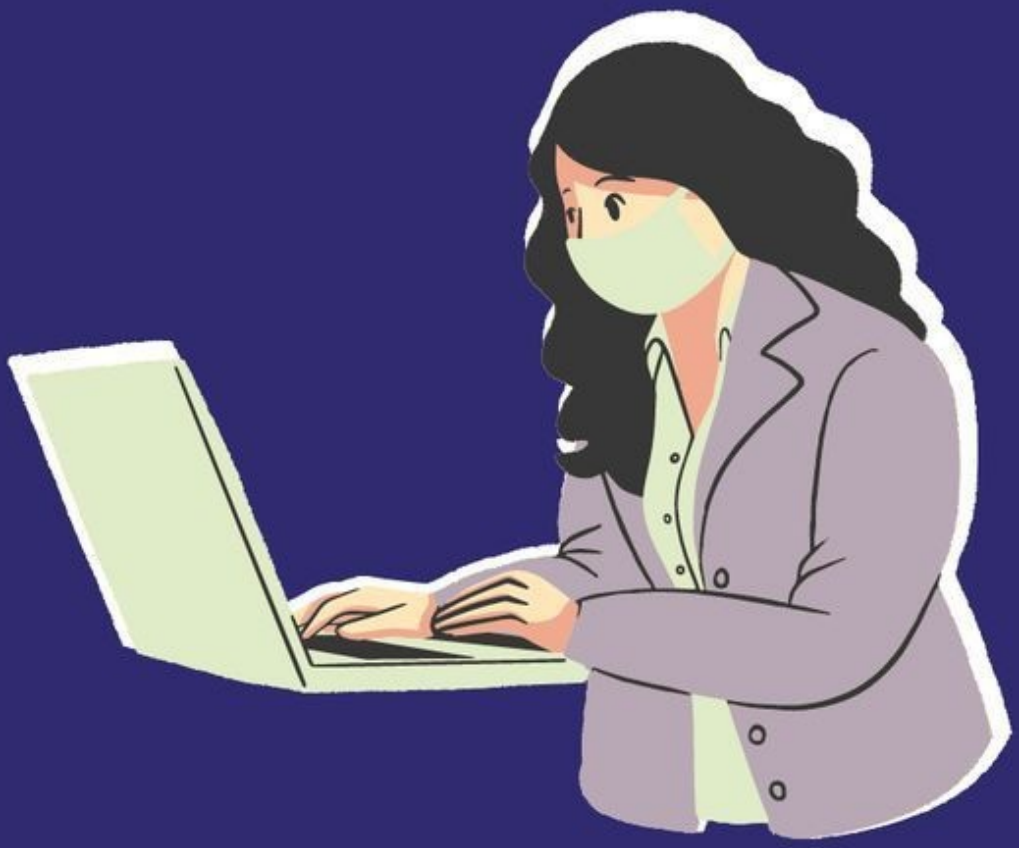
- Compile-time polymorphism
- Runtime polymorphism

What is Encapsulation in Java

Encapsulation in Java means that a class's variables are concealed from other classes and can only be accessed through its current class's methods. Encapsulation is a protective barrier that stops other codes declared outside the class from accessing the code and data at random.



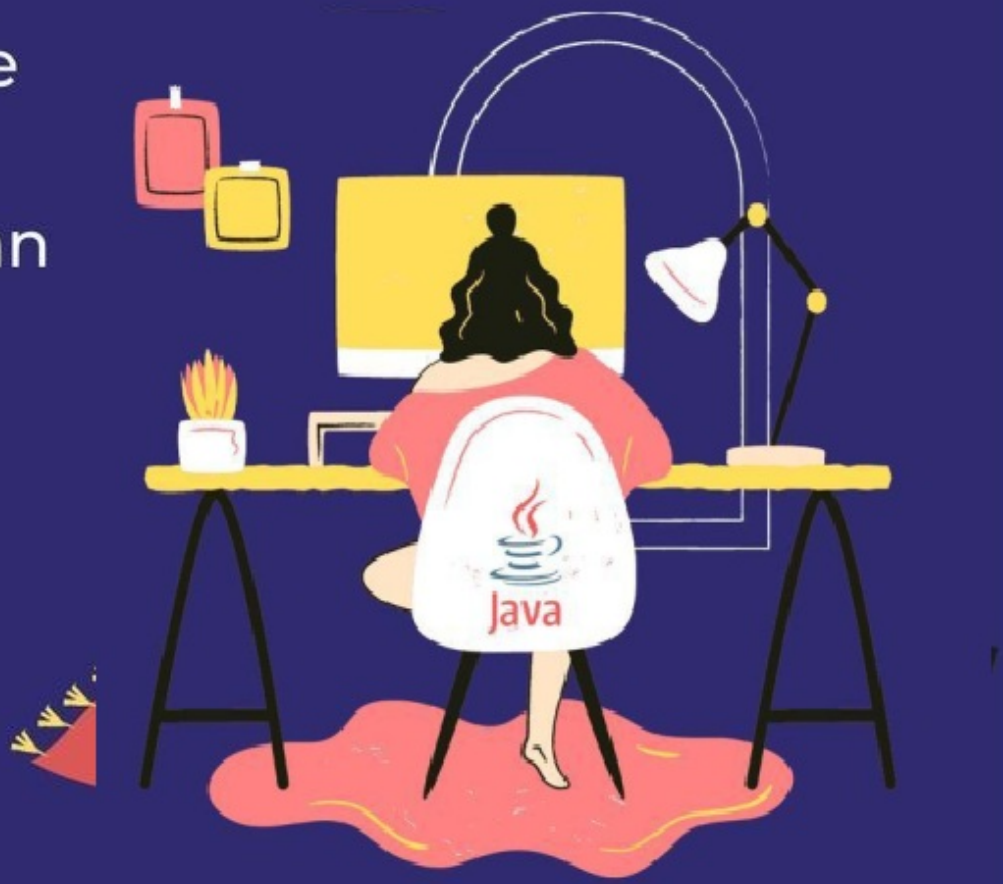
Input/Output in Java?



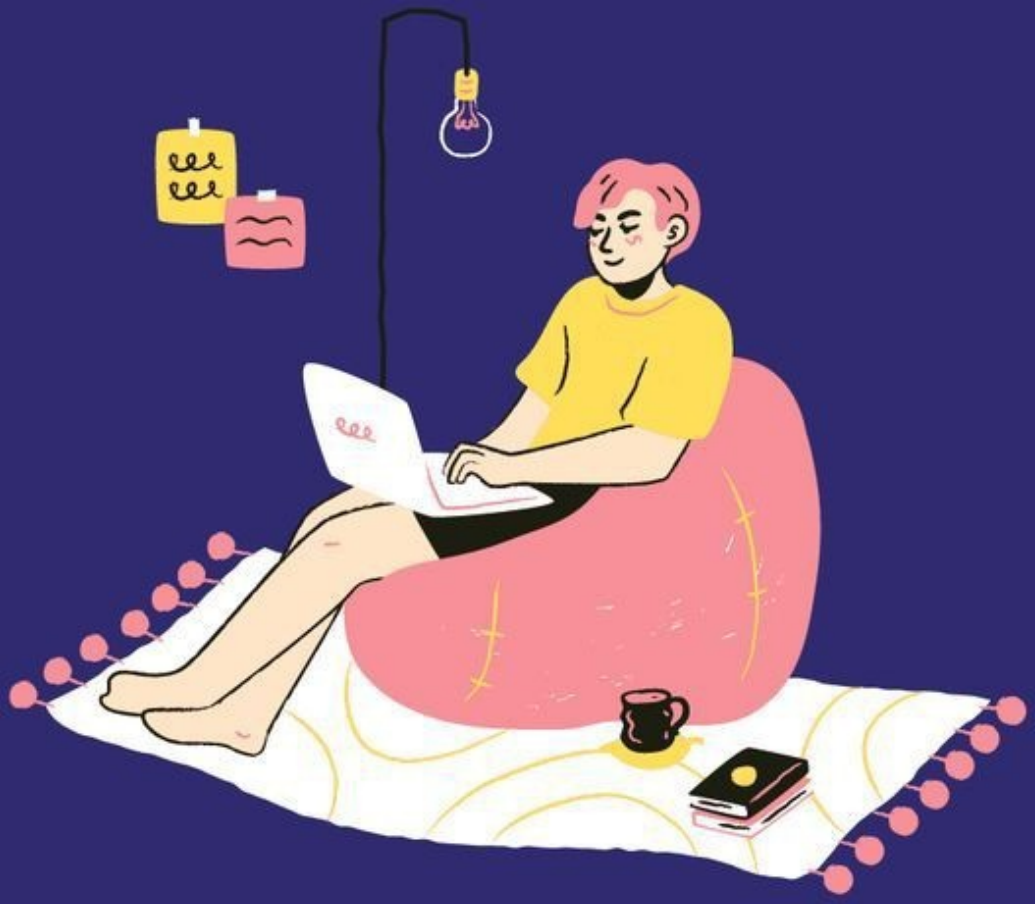
- The process of reading and writing objects is called object serialization. The file input refers to the flow of data into a program from either keyboard, mouse, memory, disk, network, or even another program.
- Similarly, the file output refers to the flow of data from a file to either screen, printer, memory, disk, network, or a program.

Data Types in Java programming

- Int
- Double
- Float
- Boolean
- Long
- Byte
- Char
- Short



Variable in Java programming



Different types of Variables in java

- Local Variable
- Instance Variable
- Class Variable

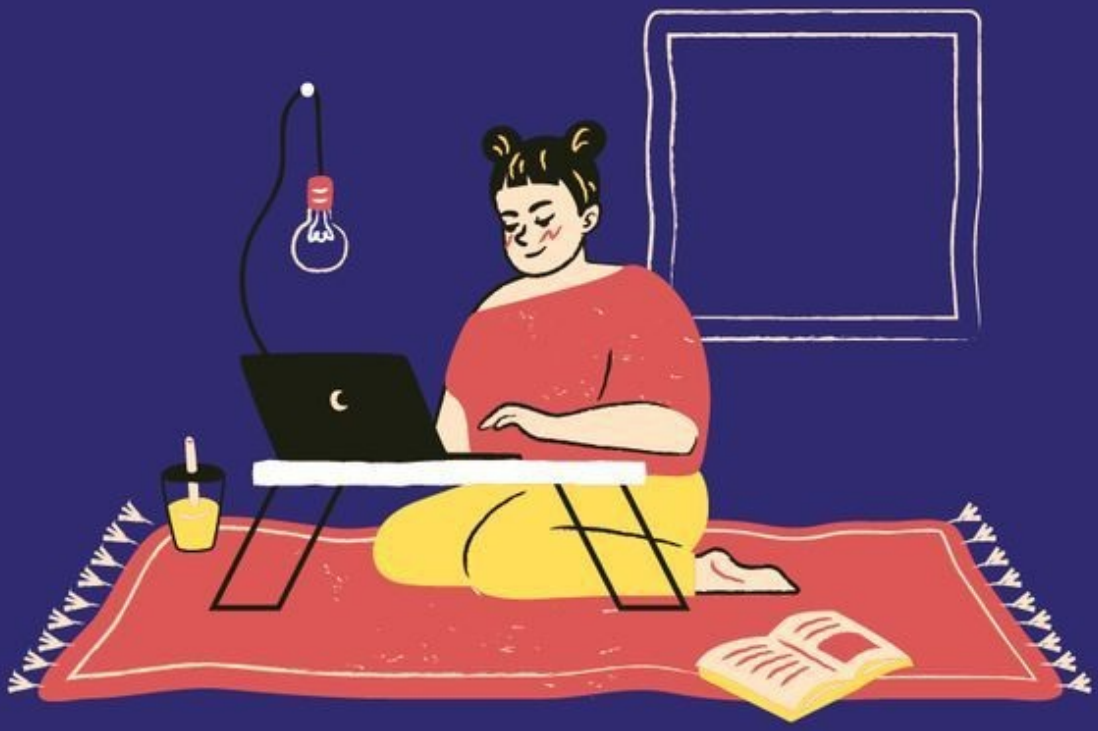
Different variables in Java programming

- **Local variables** - these are declared in methods of blocks and are instantiated for each invocation of the method of the block.

- **Instance variables** - these are members of a class and instantiated for every object of the class.

- **Class/static variables** - these also are a member of class i.e. they belong to class but are not instantiated for any object of the class.

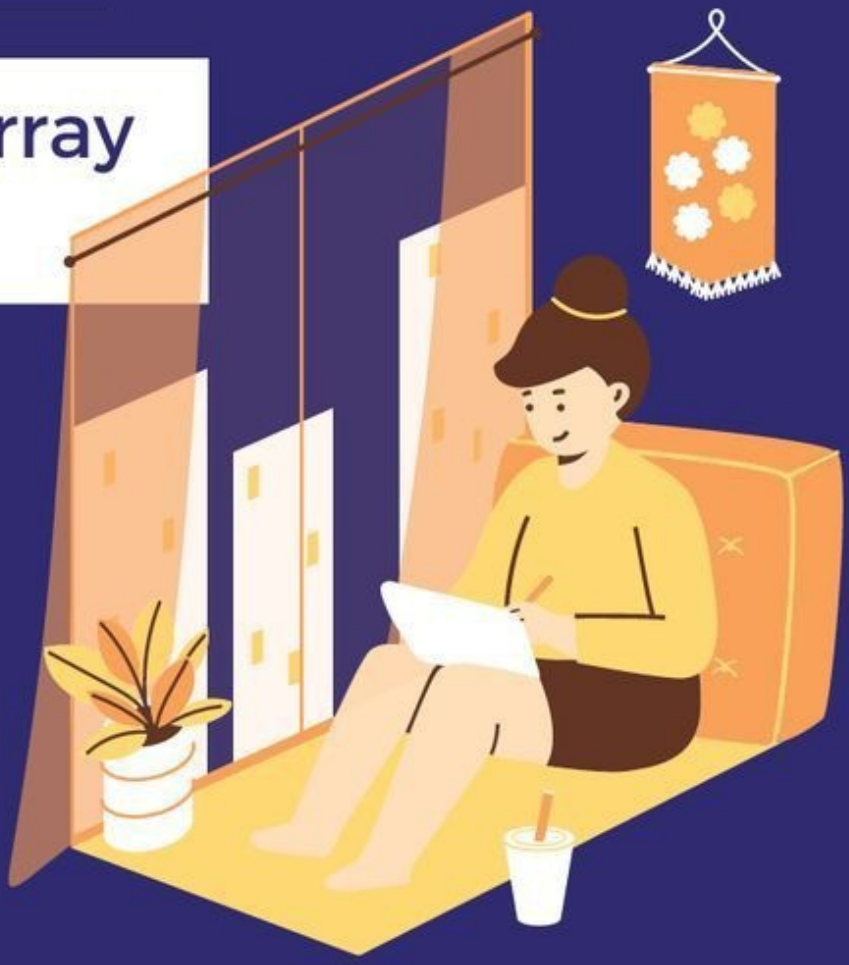
Operators in Java



Different types of operators in java

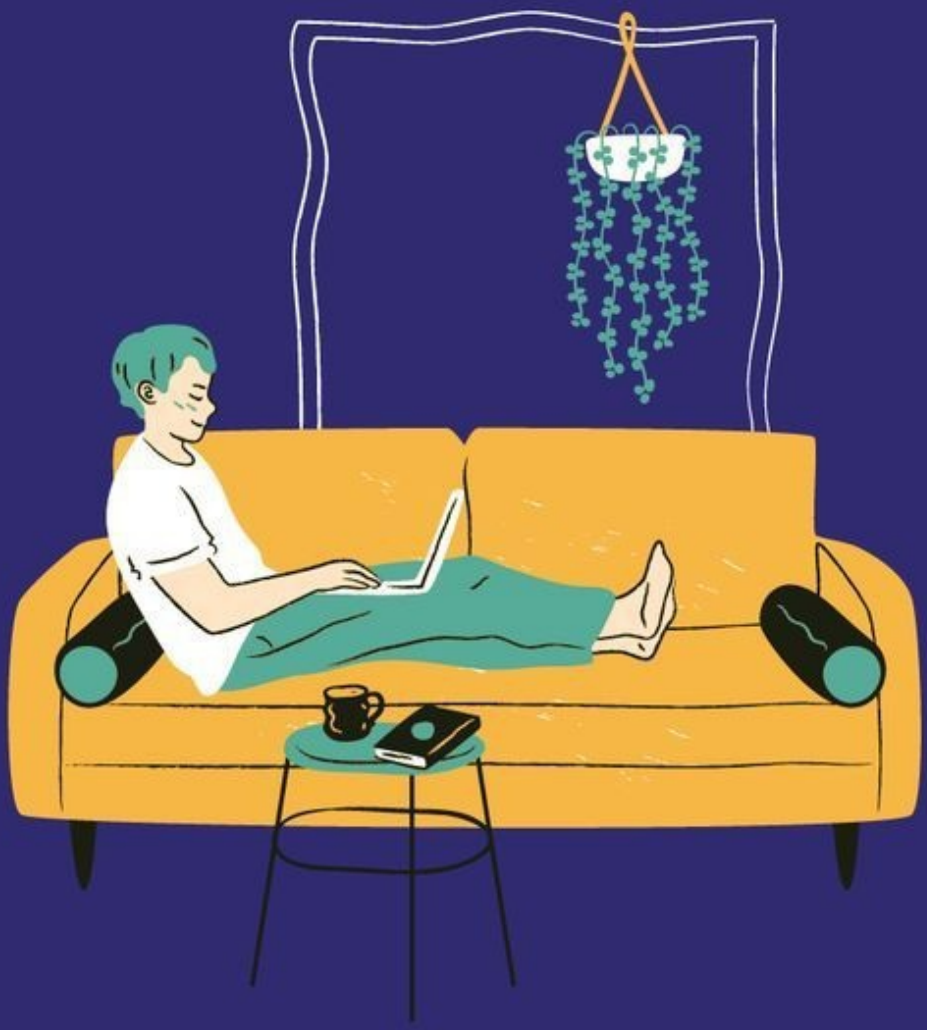
- Logical Operators
- Relational Operators
- Conditional Operator
- Bitwise Operators
- Assignment Operators
- Arithmetic Operators
- Operator Precedence

What is an Array in Java?



An Array in Java is used to store a collection of data, but it is often more useful to think of an array as a collection of variables of the same type. Java provides a data structure, the array, which stores a fixed-size sequential collection of elements of the same type. Instead of declaring individual variables, such as number0, number1, so on to number99, you declare one array variable such as numbers and use numbers[0], numbers[1], so on to, numbers[99] to represent individual variables.

Modifiers in Java



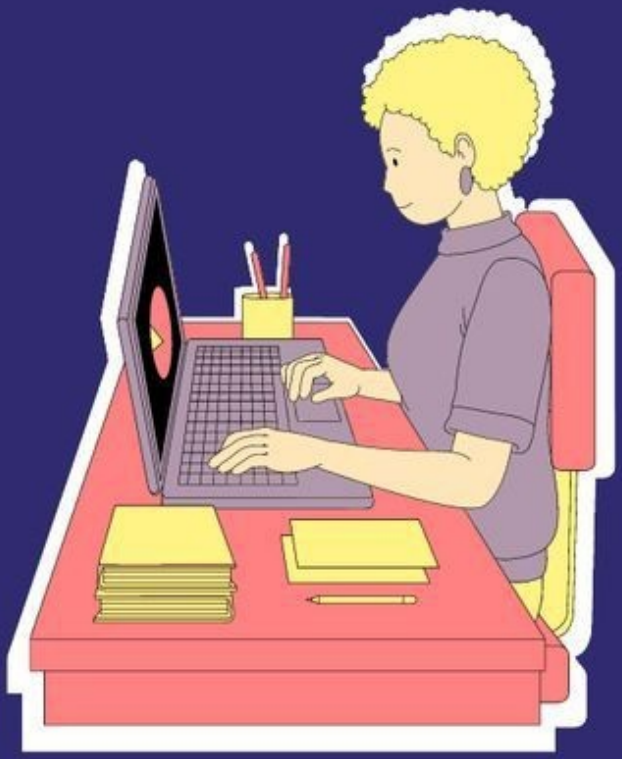
Access Modifiers in Java

- Default
- Private
- Public
- Protected

Non-access Modifiers in Java

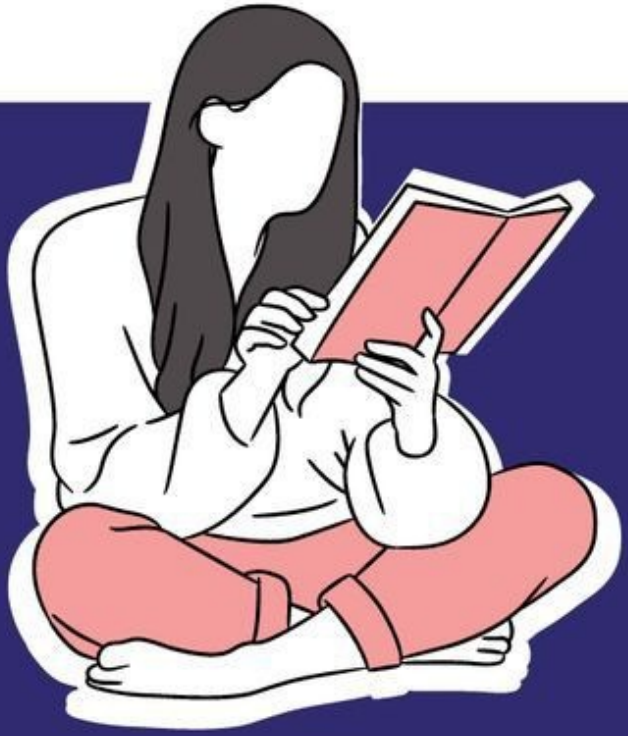
- Final
- Static
- Abstract

What is Thread in Java ?



- A Thread in Java program consists of two or more components that can operate in parallel. Multi-threading is built-in to Java, unlike many other programming languages.
- Two or more portions of a program can execute at the same time. A thread is a component of such a program. Each thread functions as a mini-program.

Method Overloading in Java

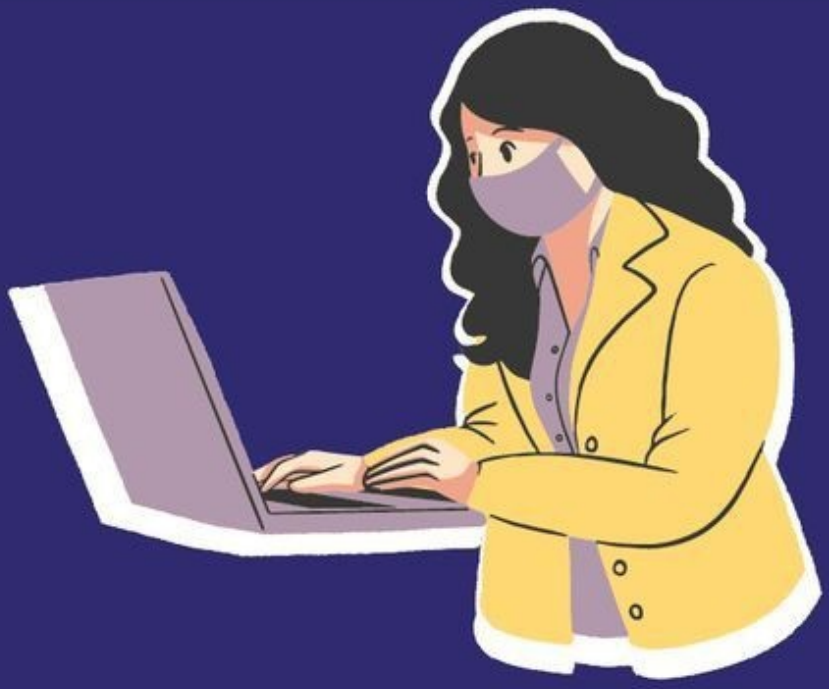


Method Overloading in java occurs when a class has many methods with the same name but distinct parameters. If we only need to conduct one operation, having the methods named the same improves the readability of the program.

What is Method overriding in Java?

Method overriding in Java can be defined as a condition in which a child class has the same method as declared in the parent class. It has the advantage of allowing a subclass to define behavior that is specific to its type,

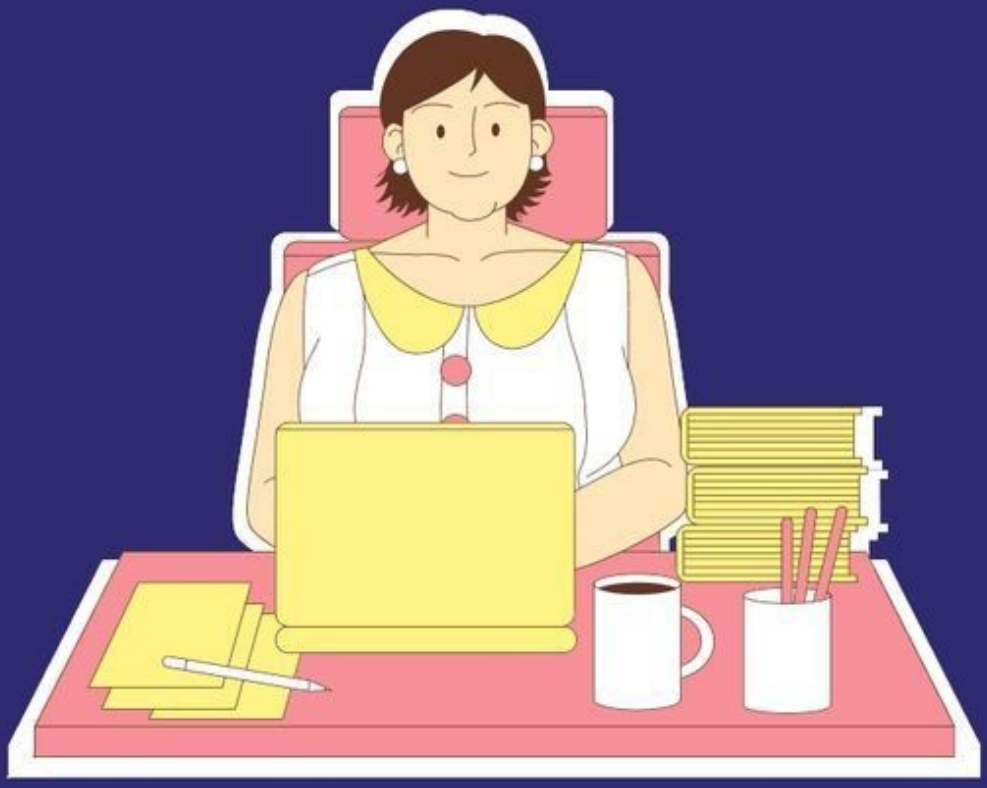
Constructor in Java



Types of Java constructors

- Default constructor
- No argument constructor
- Parameterized constructor

What is an Exception in Java?



An exception in Java is a condition that is caused by a program's run-time error. When the Java interpreter discovers a problem, such as dividing an integer by zero, it constructs and throws an exception object.

What is final keyword in Java?

- A final keyword in Java can be declared as a member, class, method, and function parameter. Anything declared as final prevents its contents from being a modifier.
- The final keyword in java is a non-access modifier that prevents classes, attributes, and methods from being changed (impossible to inherit or override).

What is a Java applet ?

- Java Applet is a GUI application that is part of an HTML document and is delivered over the internet using World Wide Web (WWW) browsers.
- An applet is not a typical, self-contained main program under control of the user, The WWW browser allocates a rectangular region of the document to the applet. Applet is invoked by a WWW browser and is under its control.
- An applet is controlled by the browser, there is no main program. java.applet and java.awt library is used to build an applet.

Branching statements in Java

1) if() statement

a) if
b) nested if
c) if-else
d) nested if.....else
e) if...else...if ladder

2) switch() statement

3) return() statement

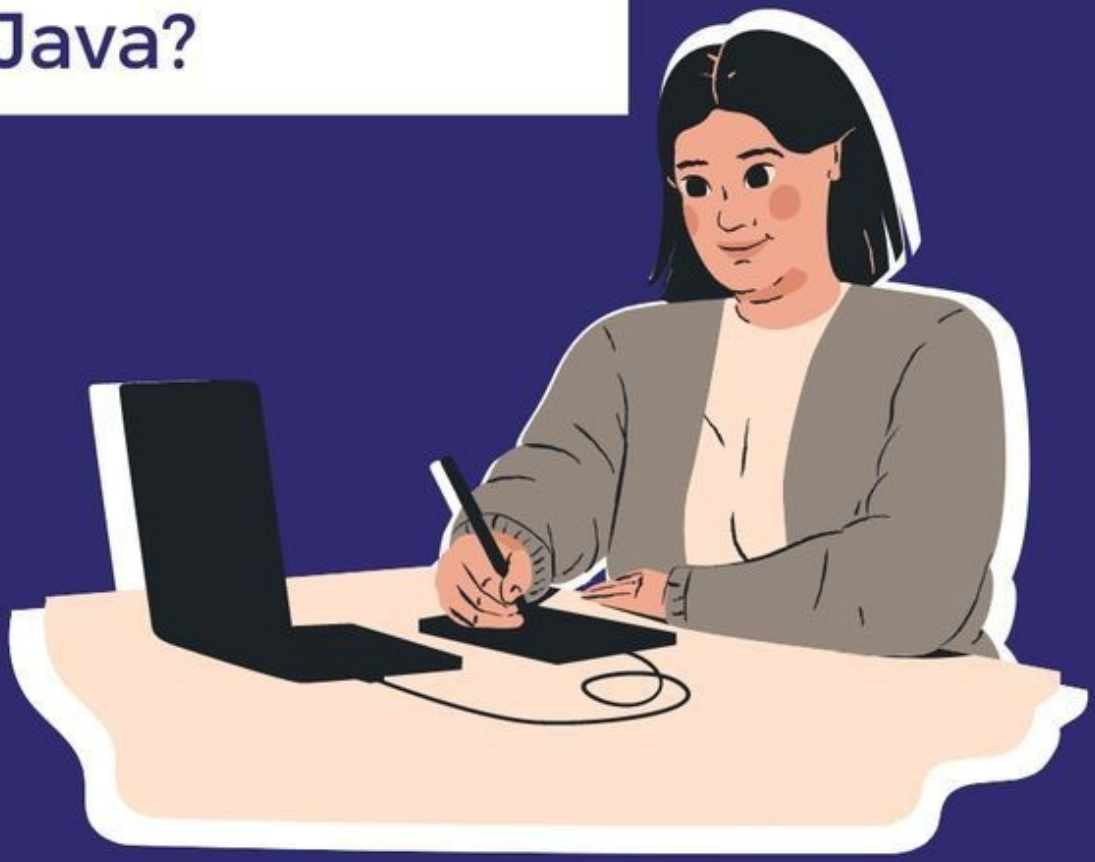
What is "super" keyword in Java?

- The “super” keyword is used to access parent class methods.
- In Java, the keyword super is a reserved keyword, which means we can’t use it as an identifier.
- The term super is used to refer to the instance of a super-class as well as static members.
- Super is also used to invoke super-class’s method or constructor.
- It can be used to call a method from a parent class.

What is "this" keyword in Java?

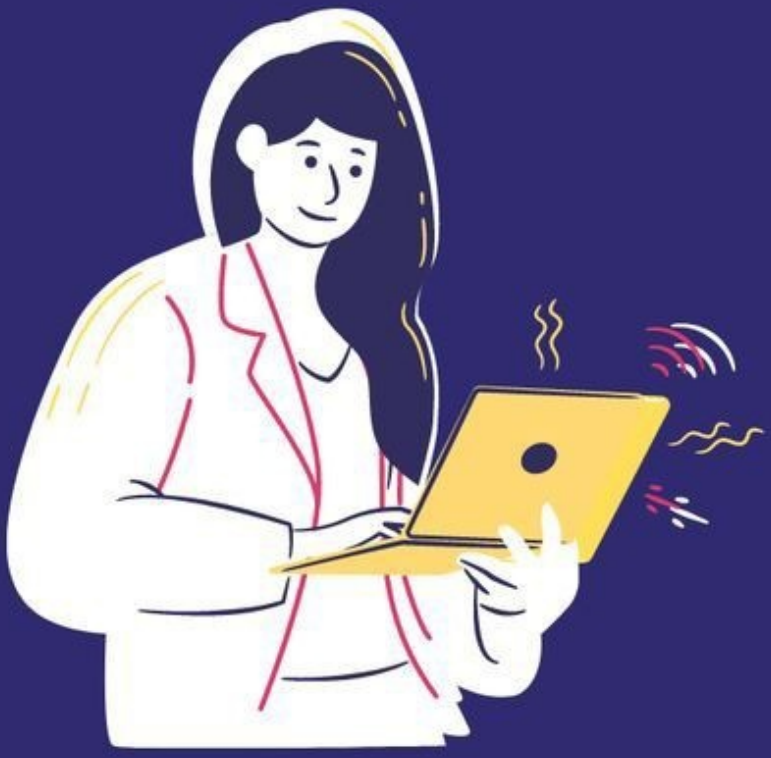
- "**this**" keyword is typically used inside constructors and setters, and optionally inside getters (fields).
- We can't use this as an identifier because it's a reserved keyword in Java.
- This is used to refer to the instance of the current class as well as static members.

What is interface in Java?



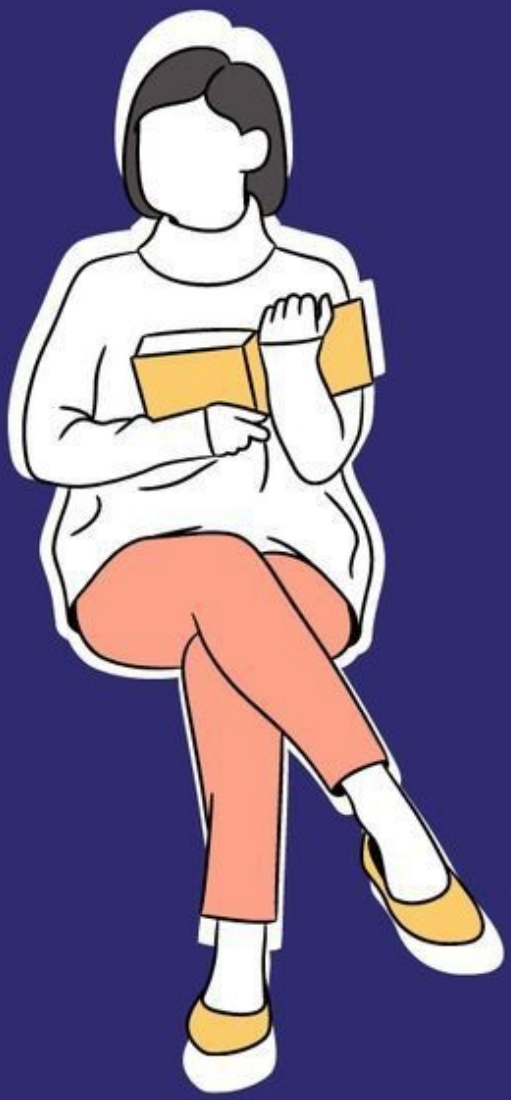
An Interface in Java can be defined as a blueprint for a class. It has both static and abstract constants and functions. In Java, the interface is a means of achieving abstraction. An interface in Java can only have abstract methods i.e. methods with no method body. In Java, it is used to achieve abstraction as well as multiple inheritance.

What is "inner class" in Java ?



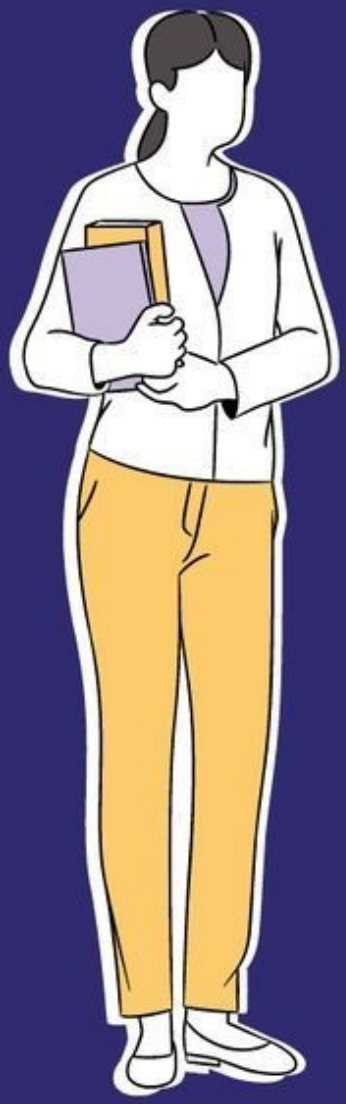
- An inner class in Java is any class whose definition is inside the definition of another class. Inner classes can be either named or anonymous.
- It is possible to define a class within another class in Java, and these classes are referred to as nested classes.
- They allow you to logically arrange classes that are only used in one place, increasing encapsulation and making code more readable and maintainable.

What is a Garbage collection in Java?



- Garbage collection is a method through which Java programs do automatic memory management.
- Java programs are compiled into byte-code that may be executed by a Java Virtual Machine, or JVM.
- Objects are produced on the heap, which is a part of memory devoted to the Java application, while it runs on the JVM.
- Some objects will become obsolete over time. To free up memory, the garbage collector detects these useless objects and deletes them.

What is finalize() method in Java?



- When an object is destroyed, it may be necessary for it to do some action. If an object holds a non-java resource, such as a filehandle or a window character font, you should ensure that these resources are removed before the object is destroyed.
- Java has a mechanism called finalization that can be used to deal with such scenarios. You can define particular actions that will occur when an item is about to be reclaimed by the trash collector by utilizing finalization.