# OOPS FUNDAMENTALS

## 1.How to create an object?

The object is a basic building block of an OOPs language. In Java, we cannot execute any program without creating an object. There is various way to create an object in Java that we will discuss in this section, and also learn how to create an object in Java**.**
Java provides five ways to create an object.
1.using new keyboard
2.using clone() method
3.using newinstance() method of the class
4.using newinstance() method of the constructor class
5,using deserialization

## 2.What is the use of a new keyboard in java?

The Java new keyword is used to create an instance of the class. In other words, it instantiates a class by allocating memory for a new object and returning a reference to that memory. We can also use the new keyword to create the array object.
1.it is used to create the object.
2.it allocated the memory at runtime
3.it allocated the memory in the heap area.
4.it invokes the object constructor.

## 3.What are the different types of variables in java

A variable is a container which holds the value while the Java program is executed. A variable is assigned with a data type.
Variable is a name of memory location. There are three types of variables in java:

- local variable
- instance variable
- static variable

### 1) Local Variable

A variable declared inside the body of the method is called local variable. You can use this variable only within that method and the other methods in the class aren't even aware that the variable exists.A local variable cannot be defined with the "static" keyword.

### 2) Instance Variable

It is called an instance variable because its value is instance-specific and is not shared among instances.A variable declared inside the class but outside the body of the method, is called an instance variable. It is not declared as static.

### 3) Static variable

A variable that is declared as static is called a static variable. It cannot be local. You can create a single copy of the static variable and share it among all the instances of the class. Memory allocation for static variables happens only once when the class is loaded in the memory.

## 4.What is the difference between instance variables and local variables?

The main difference between instance variable and local variable is that instance variable is a variable that is declared in a class but outside a method, while a local variable is a variable declared within a method or a constructor.

### What is Instance Variable

An instance variable is a variable declared in a class, but outside a method. These variables represent the object state throughout the class.  Any object of that class has its own copy of that instance variable. Therefore, you cannot find a modification in one object's instance variable in the instance variable of another object. These variables are visible to all constructors and methods of the class.

### What is Local Variable

A local variable is a variable that is declared inside a method or a constructor. Local variables are created when entering the method or a constructor. Similarly,  exiting the method or a constructor destroys these variables. Therefore, local variables are only visible within the declared method or the constructor.

## 5.In which area memory is allocated for instance variables and local variables?

Stack and heap are the memories allocated by the OS to the JVM that runs in the system.Stack is a memory place where the methods and the local variables are stored. (variable references either primitive or object references are also stored in the stack). Heap is a memory place where the objects and its instance variable are stored.

## 6.What is method overloading?

If a class has multiple methods having the same name but different in parameters, it is known as Method Overloading.

If we have to perform only one operation, having same name of the methods increases the readability of the program

Suppose you have to perform addition of the given numbers but there can be any number of arguments, if you write the method such as a(int,int) for two parameters, and b(int,int,int) for three parameters then it may be difficult for you as well as other programmers to understand the behaviour of the method because its name differs.

**Advantage of method overloading**

Method overloading increases the readability of the program.

Different ways to overload the method

**There are two ways to overload the method in java**

1. By changing number of arguments
2. By changing the data type