CORE JAVA

In the previous chapter we installed JDK on our local machine and we also discussed the basic CMD commands.

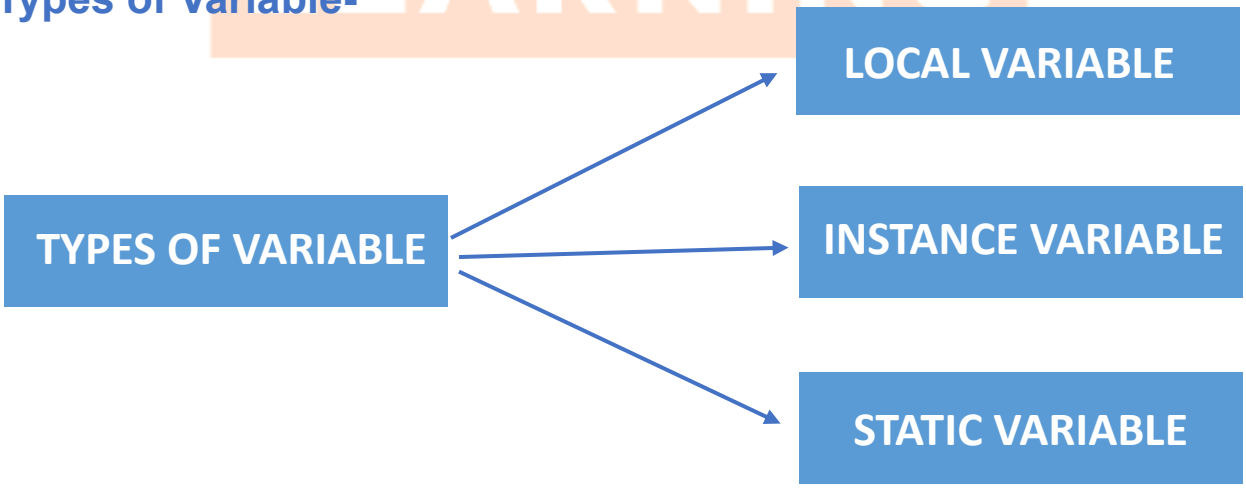
Java Variables

Java Variable is a container that holds a value. Each variable has a data type that determines what kind of data it can hold, such as integers, floating-point numbers, characters, or objects.

Suppose you want to store a number like 10 or 20 so we will use integer datatype. To store values like alphabets ‘a’, ‘b’ then we will use character datatype.

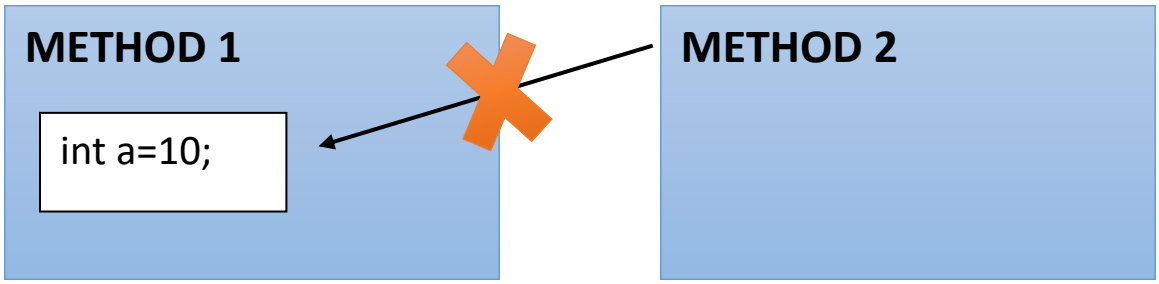
A Java variable is a fundamental building block of a Java program that stores data. It has a type, a name, and a scope, which determines where in the code the variable can be accessed.

Types of Variable-



1.Local Variable-

A variable that is declared inside a method is known as local variable. The scope of this variable is limited inside the block in which it is created.



Method 2 cannot use the variable declared in method 1 because it is a local variable.

2.Instance Variable-

A variable declared inside the class but outside the scope of a method is known as instance variable. An object is used to initialize instance variables.

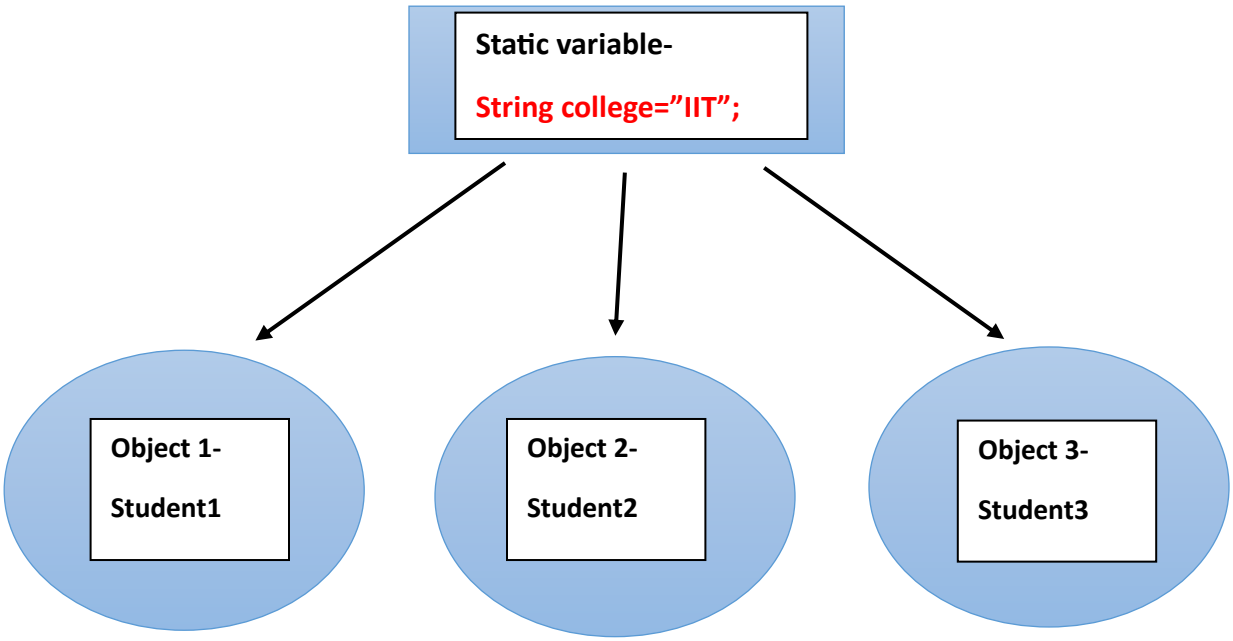
Instance variables are accessible by all the constructors, methods created within the class.

3.Static Variable-

Declared with the static keyword within a class but outside any method, constructor, or block.

A single copy is shared among all instances of the class.

Example-



Memory allocation for static variables happens only once when the class is loaded in the memory.

JAVA DATATYPES

Datatypes-

A data type specifies the type of data that a variable can hold. It defines the size and type of values that can be stored in variables, as well as the operations that can be performed on those values.

There are two types of data types in Java:

Primitive data types: The primitive data types includes char, byte, short, int, long, float, boolean and double.

Non-primitive data types: The non-primitive data types include Classes, Interfaces, and Arrays.

Primitive datatype-

Data Type	Size (in bits)	Default value
byte	8	0
short	16	0
int	32	0
long	64	0L
float	32	0.0f
double	64	0.0d
boolean	1	False
char	16	'\u0000' (null character)

1. byte-

- **Size:** 8 bits (1 byte)
- **Range:** -128 to 127
- **Default Value:** 0

Example- byte age=30;

2. short

- **Size:** 16 bits (2 bytes)
- **Range:** -32,768 to 32,767
- **Default Value:** 0

Example- short age=30;

3. int

- **Size:** 32 bits (4 bytes)
- **Range:** -2^31 to 2^31 - 1
- **Default Value:** 0

Holds integer value.

Example- int a=10;

int p=-10;

4. long

- **Size:** 64 bits (8 bytes)
- **Range:** -2^63 to 2^63 - 1
- **Default Value:** 0L (note the 'L' suffix)

Example- long worldPopulation = 7800000000L;

5. float

- **Size:** 32 bits (4 bytes)
- **Range:** Approximately ±3.40282347E+38F (6-7 significant decimal digits)
- **Default Value:** 0.0f (note the 'f' suffix)

Example- float pi = 3.14f;

6. double

- **Size:** 64 bits (8 bytes)
- **Range:** Approximately ±1.7976931348623157E+308 (15 significant decimal digits)
- **Default Value:** 0.0d (note the 'd' suffix, though optional)

Example- double distance = 299792458.0;

7. boolean

- **Size:** Not precisely defined (JVM dependent)
- **Values:** true or false
- **Default Value:** false

Example- boolean ans=true;

8. char

- **Size:** 16 bits (2 bytes)
- **Range:** Unicode characters (0 to 65,535)
- **Default Value:** '\u0000' (null character)

Example- char grade=’A’;

In Java String is a class, and we create object of String. We will discuss about String later.

Practical-

SecondProgram - Notepad

File Edit Format View Help

```
public class SecondProgram{
        public static void main(String args[])
        {
                int a=10;
                char grade='A';
                float pi=3.14f;
                boolean value=true;
                System.out.println(a);
                System.out.println("Grade:"+grade);
                System.out.println("Value of pi is:"+pi);
                System.out.println(value);
        }
}
```

```
C:\Users\LENOVO\Documents\java_practical>javac SecondProgram.java

C:\Users\LENOVO\Documents\java_practical>java SecondProgram
10
Grade:A
Value of pi is:3.14
true
```

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