Variables and Datatypes

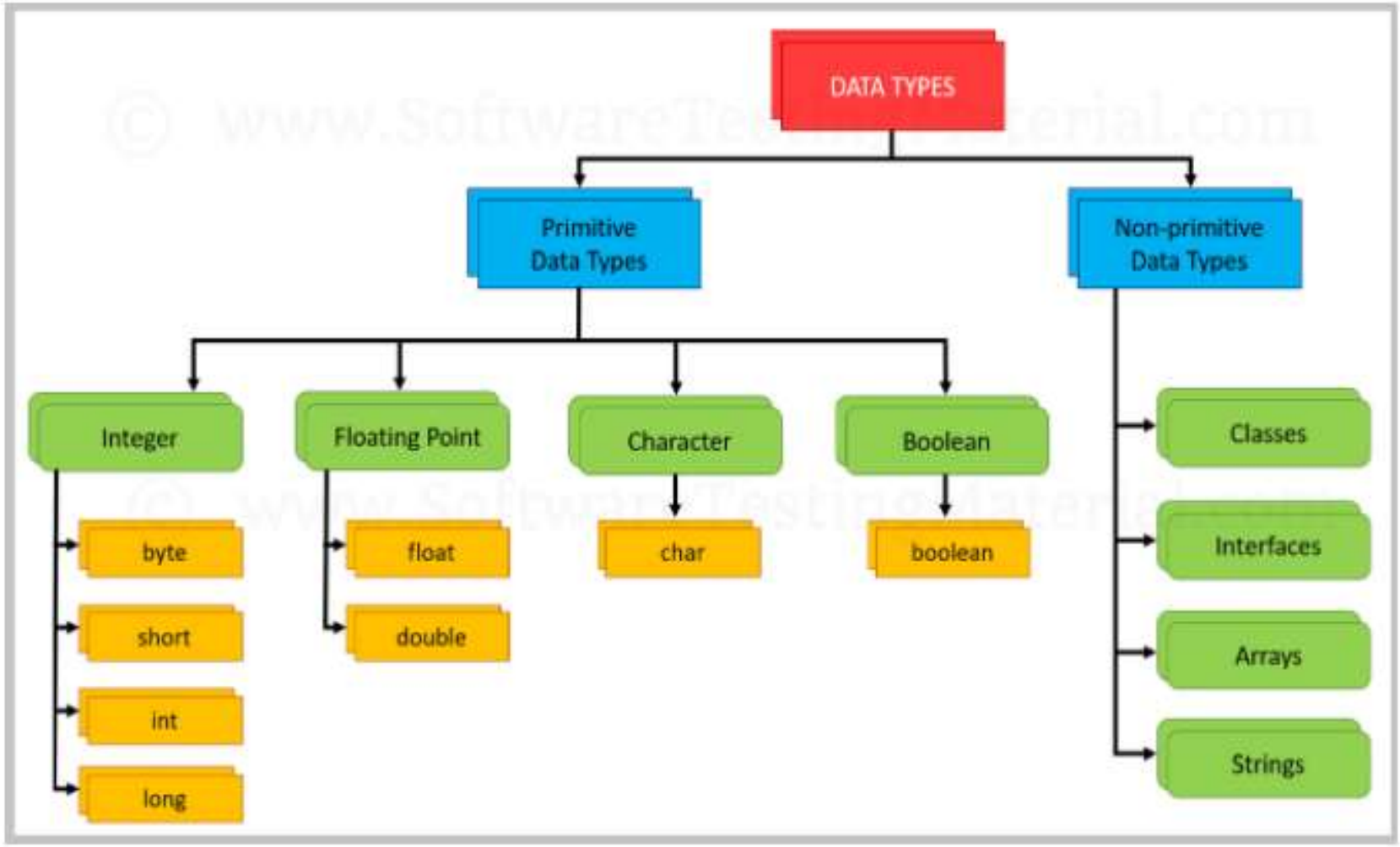
- **Variable:** It is a container which is used to store a single value.
- We have two types of variables they are:

1. Primitive Variables.
2. Non Primitive Variables.

- **Datatypes:** Datatypes used to create variables of specific type.
- In java data types are classified into 2 types.

1. Primitive Datatype.
2. Non Primitive Datatype.

- **Primitive data type:**
- The data type which is used to create a variable to store primitive value such as numbers, characters, Boolean is known as primitive data type.
- **Note:** All primitive data types are keywords in java.
- **Non-Primitive data type:**
- The data type which is used to create a non primitive variable to store the reference is known as Non Primitive data type.
- **Note:** Every class name in java is non-primitive data type.


DATA TYPES
Primitive Data Types
Non-primitive Data Types
Integer
Floating Point
Character
Boolean
byte
short
int
long
float
double
char
boolean
Classes
Interfaces
Arrays
Strings

PRIMITIVE VALUES		PRIMITIVE DATA TYPES	DEFAULT VALUES	SIZE
Numbers	Integer (Whole number) +ve to 0 to -ve	byte	0	1 byte
		short	0	2 byte
		int	0	4 byte
		long	0 l / L	8 byte
	Floating value	float	0.0 f / F	4 byte
		double	0.0 d / D	8 byte
Character		char	/u0000	2 byte
Boolean		boolean	false	1 bit

Range of numeric data types in Java

Type	Size	Range
byte	8 bits	-128 .. 127
short	16 bits	-32,768 .. 32,767
int	32 bits	-2,147,483,648 .. 2,147,483,647
long	64 bits	-9,223,372,036,854,775,808 .. 9,223,372,036,854,775,807
float	32 bits	$3.40282347 \times 10^{38}$, $1.40239846 \times 10^{-45}$
double	64 bits	$1.7976931348623157 \times 10^{308}$, $4.9406564584124654 \times 10^{-324}$

Note: The number data type in increasing order of capacity.

byte<short<int<long<float<double

Primitive Variable

- The variable which is used store a primitive value such as numbers, characters, boolean.
- We can create primitive variable with the help of primitive data type.
- **Syntax:**

datatype identifier1,identifier2…

primitive datatype identifier1…..

Example: int a; boolean b;

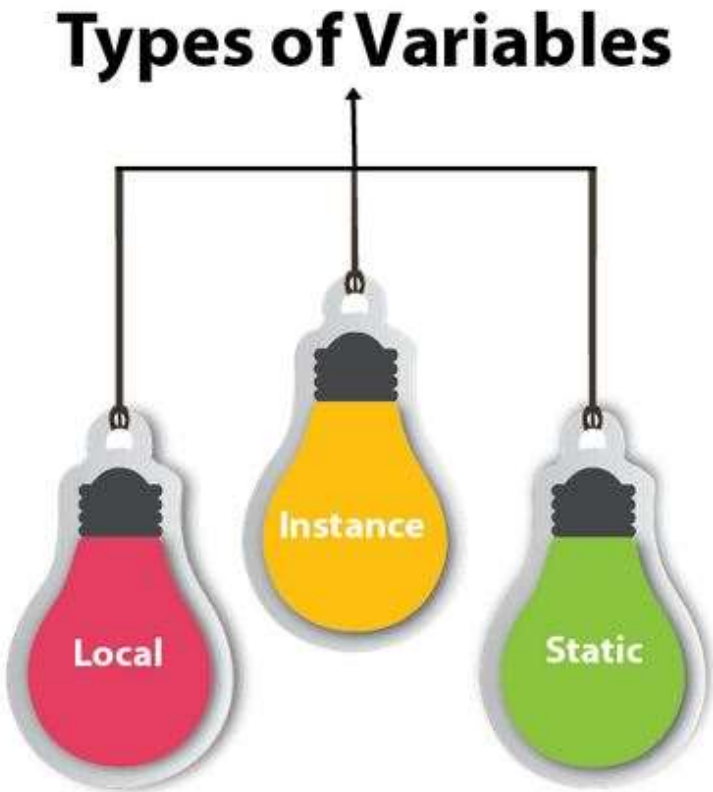
Non-Primitive Variable:

- The variable which is used to store a reference.
- It is also known as reference variable
- **Syntax:** Non primitive datatype identifier1, identifier2
- **Example:** String s=new String();

Scope of Variable

- The visibility of a variable is known as scope of a variable.
- Based on scope of variables we can categorize variable in three types.

1. Local Variables
2. Static Variables
3. Non-Static Variables.(Instance)



Local Variables

- Local Variables developed inside a method block or any other block except class block is known as local variable.
- Characteristics of Local Variable:

- We can't use local variables without initialization if we try to use variable without initialization then we get compile time error.
- Local variable will not be initialized with default values.
- The scope of the local variable is nested inside the block whenever it is declared, hence it can't be used outside the block.