Variables:-

- Variable is piece of memory location which is used to store the information.
- Variables are reference to memory location in which data are stored.

- 3 steps of variable usage are:-
  - Variable Declaration.
  - Variable Initialization.
  - Variable utilization.

- Declaration :-

  Datatype + Reference Variable

  Ex:- int a; char b ; float c;

  Here datatype represents which type of data the reference variable can store in the memory location, and the reference variable gives the identity to data, so as if we want to access the data we have to call the reference variable.

- Variable Initialization:-

  Variable initialization means giving values to a variable.

  Ex :-

  int a = 10;

  So here a is a reference variable which represents a memory location in which we are storing a value i.e 10.

- Variable utilization:-

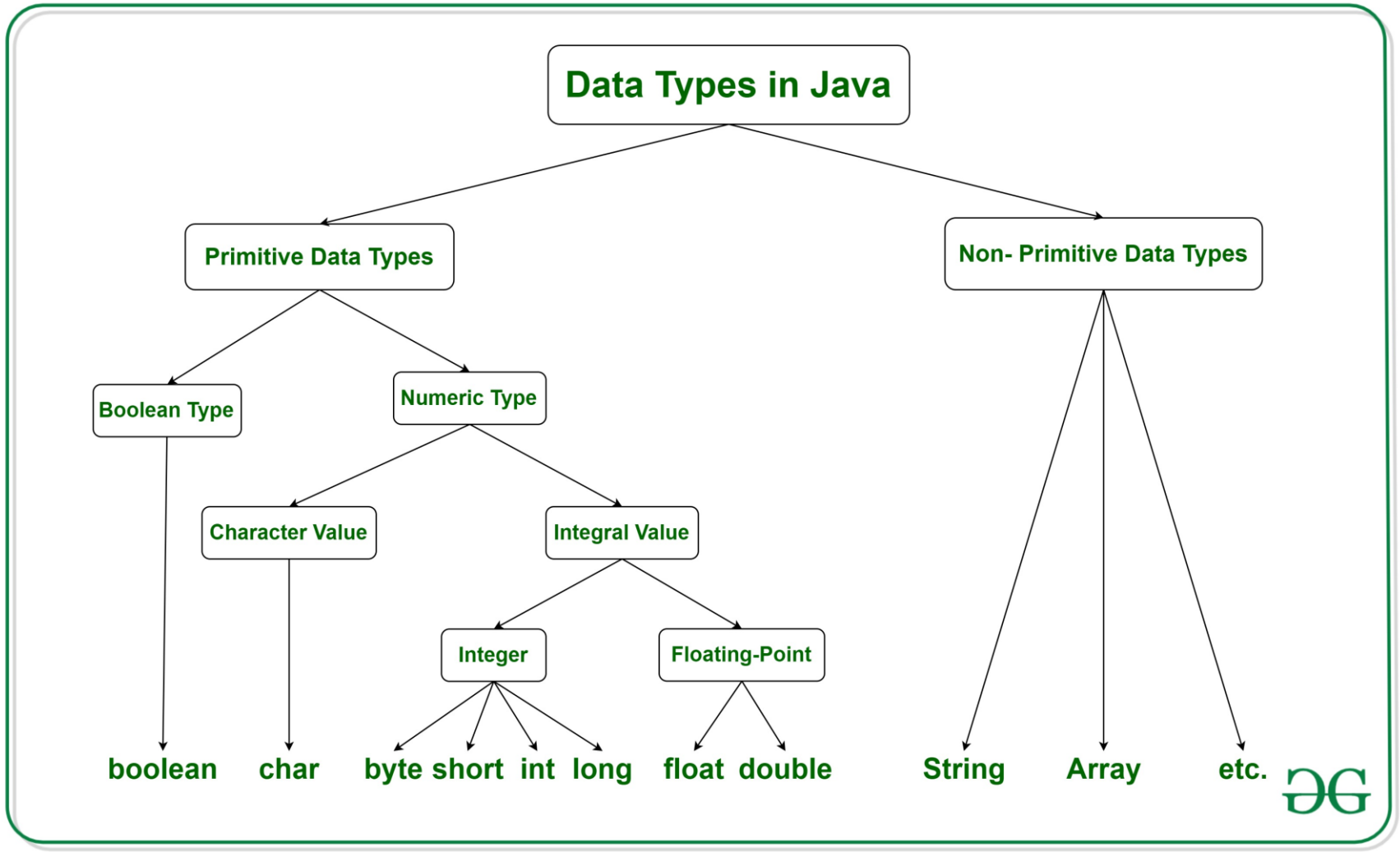
  Variable utilization means using the variable.

```
int a = 4;
Int b

int b = a;
```

Or

```
int a = 5;
int b = 6;
Int c;

Int c = a+b;
i.e c = 5+6;
So C=11
```

Data Types :- Datatypes are the keyword which represents a type of Data. It is predefined.



Data Type	Description	Defauult Values	Size	comments
Boolean	True or False	FALSE	1 bit	
char	character	null	2 byte	
byte	numeric	0	1 byte	
short	numeric	0	2 byte	
int	numeric	0	4 byte	
long	numeric	0	8 byte	
float	decimal	0.000000	4 byte	upto 7 decimal digits
double	decimal	0.0000000000000000	8 byte	upto 16 decimal digits

Non-Primitive Data Type or Reference Data Types:-

String: Strings are defined as an mulitple of characters. The difference between a character array and a string in Java is, the string is designed to hold a sequence of characters in a single variable whereas, a character array is a collection of separate char type entities.

Java Operators :-

Operators are symbols which are used to perform some operations.

Types Of Operators:-

- Arithmetic Operators:-This operation are used to perform any arithmetic operations in Java.
    1. +
    2. -
    3. *
    4. / = quotient
    5. % = remainder

Relational Operators :- It check the relation between two entities and returns true or false.
These operators are used to check for relations like equality, greater than, less than. They return boolean result after the comparison and are extensively used in looping statements as well as conditional if else statements.

1. == equal to
2. != not equal
3. > greater than
4. < less than
5. >= greater than or equal to
6. <= less than or equal to

Suraj = 20;
Dheeraj = 21;

Suraj > Dheeraj ---false
Suraj == Dheeraj--- false
Suraj<Dheeraj--- True
Suraj >= Dheeraj-- false
Suraj<= Dheeraj– true

Suraj != Dheeraj True

- Logical Operators :-

These operators are used to perform “logical AND” and “logical OR” operation, Returns Boolean value.

- **&&, Logical AND :** returns true when both conditions are true.
- **||, Logical OR :** returns true if at least one condition is true.

- **&&, Logical AND**:-
  - (Condition one)&&(Condition two) :- Both condition should be true

A	B	Result
TRUE	TRUE	TRUE
TRUE	FALSE	FALSE
FALSE	TRUE	FALSE
FALSE	FALSE	FALSE

||, Logical OR:-

(condition one) OR (condition two) {any one condition should be true}

NOT is denoted by !

A	B	Result
TRUE	TRUE	TRUE
TRUE	FALSE	TRUE
FALSE	TRUE	TRUE
FALSE	FALSE	FALSE