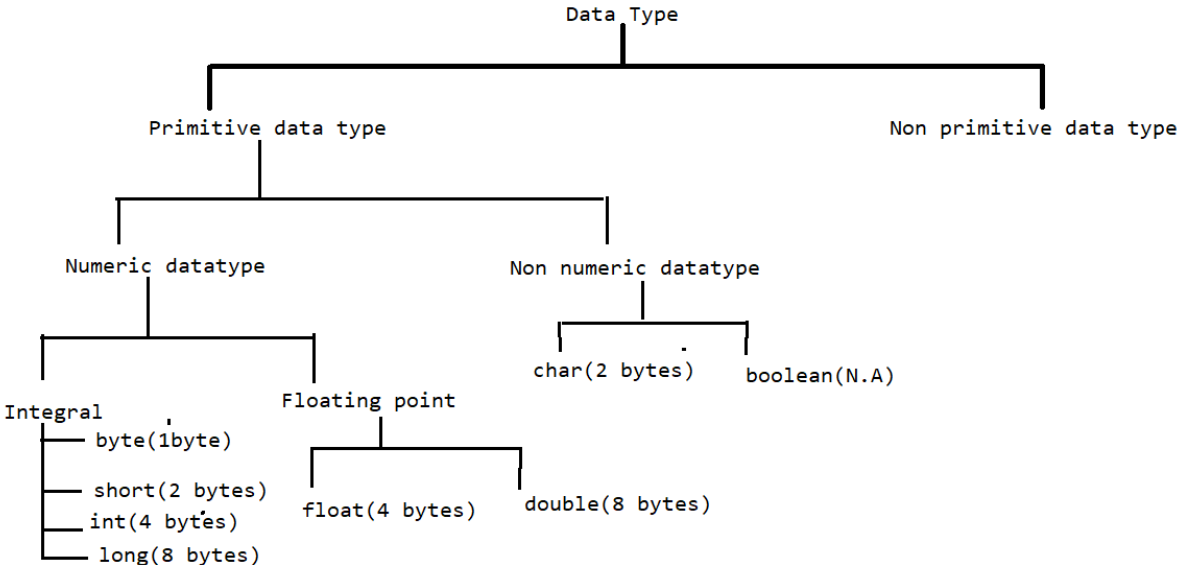
Data types: In java every variable and expression has some type. Each and every data type should be clearly define in java.

Java is also known as strongly typed language.



Numeric data type:

a. Integral data type

i. byte:

- Size of byte is 1 byte.
- Range = -128 to 127(-2^7 to 2^7 -1).

Example:

```
byte c = 127;

byte negvalue = -128;

System.out.println(c);
```

Output:

127

ii. short:

- Size of short is 2 bytes.
- Range = -32768 to 32767(-2^{15} to 2^{15} -1).

Example:

```
short s = 10;

short ss = 32767;

short s1 = -32768;

                System.out.println(s1);
```

Output:

-32768

iii. int:

- Size of short is 4 bytes.
- Range = -2147483648 to 2147483647(-2^{31} to 2^{31} -1).

Example:

```
int maxsize = 2147483647;

int minvalue = -2147483648;

System.out.println(maxsize);
```

Output: 2147483647

iv. long:

- Size of long is 8 bytes.

- Range = -2^{63} to 2^{63} -1
- While representing long value we should keep l as a suffix.

Example:

```
long l = 54545445454545l;
System.out.println(l);
```

```
public static void main(String[] args) {
    byte c = 127;
    byte negvalue = -128;
    System.out.println(c);
    System.out.println(negvalue);
    short s = 10;
    short ss = 32767;
    short s1 = -32768;
    System.out.println(s1);

    int i = 10;

    int maxsize = 2147483647;
    int minvalue = -2147483648;
```

```
        System.out.println(maxsize);
        int i1 = 10;
        int i2 = 20;
        int i3 = i1+i2;
        System.out.println(i3);

        long l = 54545445454545l;

        System.out.println(l);

    }
```

Floating point data type:

Float:

- Size of float is 4 bytes.
- Max value = 3.4×10^{38}
- Min value = 1.4×10^{-45}
- While representing float value we should keep f as a suffix.

Example:

```
float f = 56.23f;

//          maximum value can be represent:

            float f1 = 3.45656565566666565f;
```

double:

- Size of double is 8 bytes.
- Max value = 1.79×10^{308}

- Min value = 4.9×10^{-324}

Example:

```
double d = 1.56565656556565665656565665656656656;
```

Note:

If we want to use any integer value then it is recommended to use int as a data type and for decimal value it is recommended to have double as data type.

Non numeric data type:

1. Char:

Size of char is 2 bytes.

Total number of characters can be defined using char is 65536.

Example:

```
char c = 'g';

System.out.println(c);
```

2. Boolean:

Size of a Boolean data type is not applicable to it as it takes only 2 values i.e true and false.

Example:

```
boolean j = false;

        boolean k = true;
```

Non Primitive data type:

```
public static void main (String[]args) {
String s="hshvvoja565%$";

   System.out.println(s);

       }
```

output = hshvvoja565%$