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Datatypes in java

- Variables are nothing but reserved memory locations to store values. This means that when you create a variable you reserve some space in memory.

- Data types-**

The term datatype refers to the type of data that can be stored in a variable. every variable in java has a datatype.datatype specify the size and type of value that can be stored .

Java is a stongly typed language .this means that every variable must have a declared type

- There are two types of data types in Java:

- Primitive data types:** The primitive data types include Boolean, char, byte, short, int, long, float and double.

- Non-primitive data types:** The non-primitive data types include [Classes](#), [Interfaces](#), and [Arrays](#).

Data Types in Java

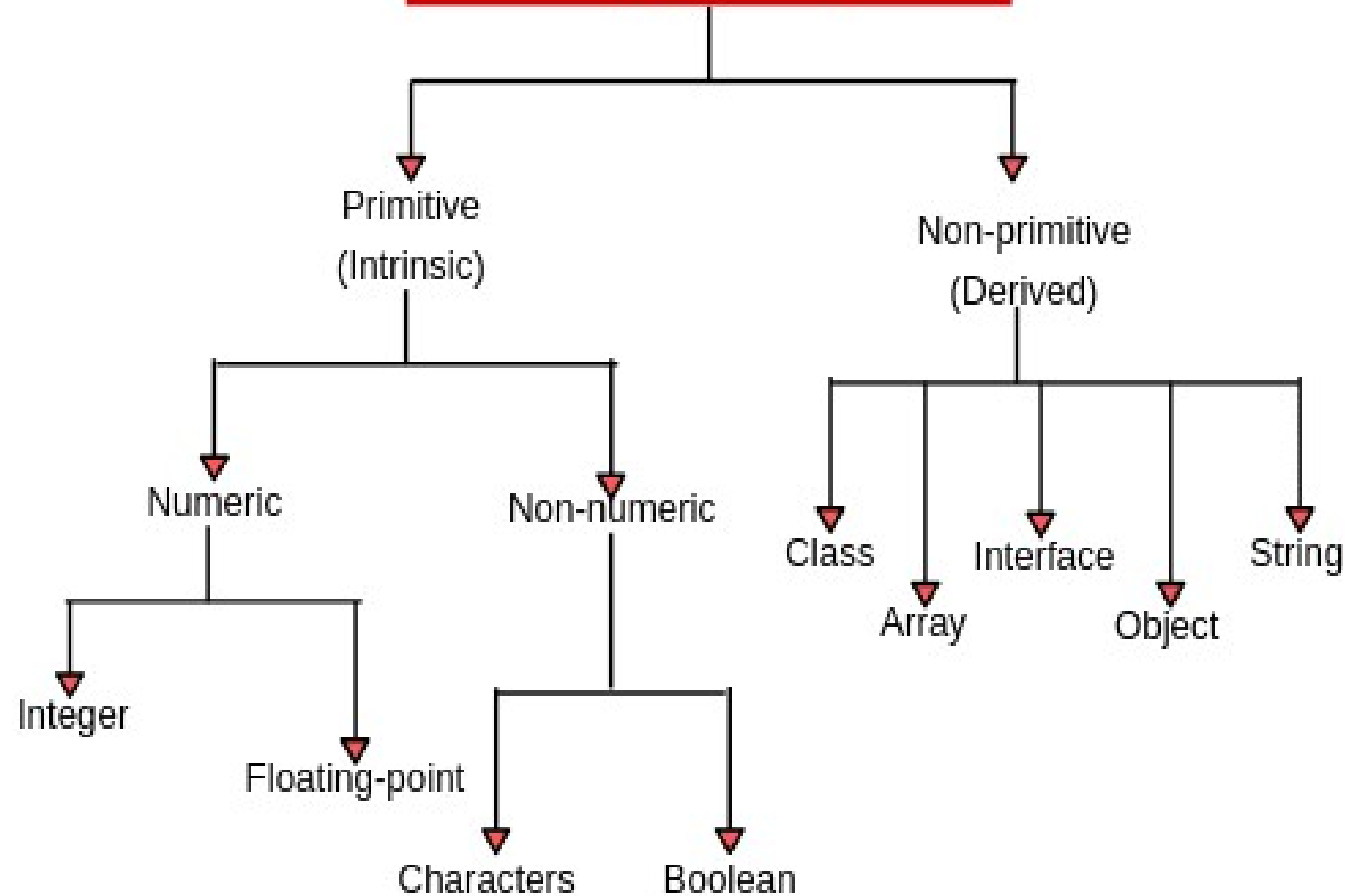


Fig: Classification of data types in java

- **Primitive Data Types-** Primitive data types are those data types whose variables can store only one value at a time. You cannot store multiple values of the same type. These data types are predefined in Java. They are named by a Keyword.
- **Integer-**
- java offers total 4 primitive integer data types byte, short, int and long. In java all integer data types are used to store signed numbers. Unlike other languages java doesn't support unsigned integers .
- **Byte-**
- Byte data type is an 8-bit (1 byte)
- It has range from -128 to 127
- Default value is 0
- This data type is used when it is required to deal with binary data or binary network streams/files.
- Example: byte a = 100, byte b = -50

- **short**
- Short data type is a 16-bit (2 byte)
- It has range from -32,768 to 32,767
- Short data type can also be used to save memory as byte data type.
- Default value is 0.
- Example: short s = 10000, short r = -20000
- **int**
- Int data type is a 32-bit
- Minimum value is - 2,147,483,648
- Maximum value is 2,147,483,647
- Integer is generally used as the default data type for integral values unless there is a concern about memory.
- The default value is 0
- Example: int a = 100000, int b = -200000

- **long**
- Long data type is a 64-bit
- Minimum value is -9,223,372,036,854,775,808
- Maximum value is 9,223,372,036,854,775,807
- This type is used when a wider range than int is needed
- Default value is 0L
- Example: long a = 100000L, long b = -200000L
- **Floating point numbers**
- Floating-point types are useful to hold numbers containing decimal point or fractional part. There are two kinds of floating points
Float and double

Float:

- Float data type is a single-precision value that has 32 –bit storage(4 byte)
- Float is mainly used to save memory in large arrays of floating point numbers
- Default value is 0.0f
- Float data type is never used for precise values such as currency
- Example: float f1 = 234.5f

- **double**

- double data type is a double-precision 64-bit
- Double data type should never be used for precise values such as currency
- Default value is 0.0d
- Example: double d1 = 123.4

- **Boolean**

- Boolean data type represents one bit of information
- There are only two possible values: true and false
- This data type is used for simple flags that track true/false conditions
- Default value is false
- Example: Boolean one = true

- **char**
- char data type is a single 16-bit Unicode character
- Minimum value is '\u0000' (or 0)
- Maximum value is '\uffff' (or 65,535 inclusive)
- Char data type is used to store any character
- Example: char letter A = 'A'
- **non-primitive data types** - (also called derived or reference data type)
- **Strings:** String is a sequence of characters. But in Java, a string is an object that represents a sequence of characters. The *java.lang.String* class is used to create a string object.

- **Arrays:** Arrays in Java are homogeneous data structures implemented in Java as objects. Arrays store one or more values of a specific data type and provide indexed access to store the same. A specific element in an array is accessed by its index.
- **Classes:** A class in Java is a blueprint which includes all your data. A class contains fields(variables) and methods to describe the behavior of an object.
- **Interface:** Like a class, an *interface* can have methods and variables, but the methods declared in *interface* are by default abstract (only method signature, no body).

- **Java Comments**

- The Java comments are the statements that are not executed by the compiler and interpreter. The comments can be used to provide information or explanation about the variable, method, class or any statement. It can also be used to hide program code.

- **Types of Java Comments**

- There are three types of comments in Java.
- Single Line Comment-The single line comment is used to comment only one line.
- `//`This is single line comment

- Multi Line Comment-The multi line comment is used to comment multiple lines of code.

```
/*  
This  
is  
multi line comment  
*/
```

- Documentation Comment
- The documentation comment is used to create documentation API. To create documentation API

```
/**  
This  
is  
documentation  
comment  
*/
```