**DATA TYPES**

Data types are the means for the tasks related to identifying and assessing the type of data. Java is rich in data types which allows the programmer to select the appropriate type needed to build variables of an application.

Java is a statically-typed programming language. It means, all variables must be declared before its use. That is why we need to declare variable's type and name.

**WHY IS THE DATA TYPE IMPORTANT?**

* Every variable in Java has a data type which tells the compiler what type of variable it as and what type of data it is going to store.
* Data type specifies the size and type of values.
* Information is stored in computer memory with different data types.
* Whenever a variable is declared, it becomes necessary to define a data type that what will be the type of data that variable can hold.

**TYPES:**

* primitive datatype
* non-primitive data type

**Primitive Data Types**

There are 8 types of primitive data types:

* boolean data type
* byte data type
* char data type
* short data type
* int data type
* long data type
* float data type
* double data type

**Non-primitive data types**

* Classes
* Interfaces
* Arrays
* String

|  |  |  |
| --- | --- | --- |
| **Data Type** | **Default size** |  |
| boolean | 1 bit |  |
| char | 2 byte |  |
| byte | 1 byte |  |
| short | 2 byte |  |
| int | 4 byte |  |
| long | 8 byte |  |
| float | 4 byte |  |
| double | 8 byte |  |

## Boolean Data Type

The Boolean data type is used to store only two possible values: true and false.

**Example:** boolean one = false;

## Byte Data Type

The byte data type is an example of primitive data type. It is an 8-bit signed two's complement integer. Its value-range lies between -128 to 127 (inclusive).

**Example:** byte a = 10, byte b = -20;

## Short Data Type

The short data type is a 16-bit signed two's complement integer. Its value-range lies between -32,768 to 32,767 (inclusive).

**Example:** short s = 10000, short r = -5000

## Int Data Type

The int data type is a 32-bit signed two's complement integer. Its value-range lies between - 2,147,483,648 (-2^31) to 2,147,483,647 (2^31 -1) (inclusive).

**Example:** int a = 100000, int b = -200000

## Long Data Type

The long data type is a 64-bit two's complement integer. Its value-range lies between -9,223,372,036,854,775,808(-2^63) to 9,223,372,036,854,775,807(2^63 -1)(inclusive). **Example:** long a = 100000L, long b = -200000L

## Float Data Type

The float data type is a single-precision 32-bit IEEE 754 floating point.Its value range is unlimited. **Example:** float f1 = 234.5f

## Double Data Type

The double data type is a double-precision 64-bit IEEE 754 floating point. Its value range is unlimited. **Example:** double d1 = 12.3

## Char Data Type

The char data type is a single 16-bit Unicode character.

**Example:** char ch = 'A'