




## Java Tutorial: Variables and Data Types in Java Programming



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Just like we have some rules that we follow to speak English (the grammar), we have some rules to follow while writing a Java program. This set of these rules is called syntax. It's like Vocabulary and Grammar of Java.

### Variables

- A variable is a container that stores a value.
- This value can be changed during the execution of the program.
- Example: `int number = 8;` (Here, `int` is a data type, the `number` is the variable name, and `8` is the value it contains/stores).

### Rules for declaring a variable name

We can choose a name while declaring a Java variable if the following rules are followed:

- Must not begin with a digit. (E.g., `1arry` is an invalid variable)

- Name is case sensitive. (Harry and harry are different)
- Should not be a keyword (like Void).
- White space is not allowed. (int Code With Harry is invalid)
- Can contain alphabets, \$character, \_character, and digits if the other conditions are met.

## Data Types

Data types in Java fall under the following categories

1. Primitive Data Types (Intrinsic)
2. Non-Primitive Data Types (Derived)

### Primitive Data Types

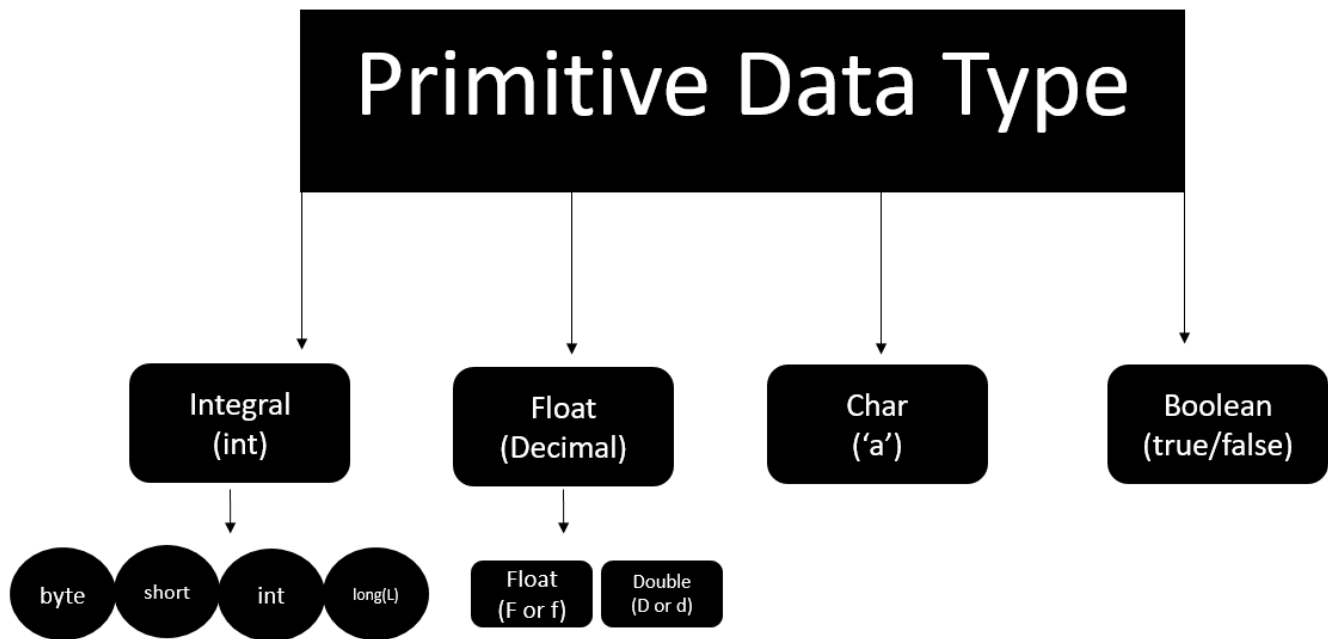
Java is statically typed, i.e., variables must be declared before use. Java supports 8 primitive data types:

Data Type	Size	Value Range
1. Byte	1 byte	-128 to 127
2. short	2 byte	-32,768 to 32,767
3. int	4 byte	-2,147,483,648 to 2,147,483,647
4. float	4 byte	$3.40282347 \times 10^{38}$ to $1.40239846 \times 10^{-45}$
5. long	8 byte	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
6. double	8 byte	$1.7976931348623157 \times 10^{308}$ , $4.9406564584124654 \times 10^{-324}$
7. char	2 byte	0 to 65,535
8. boolean	Depends on JVM	True or False

**Quick Quiz:** Write a Java program to add three numbers,

### How to choose data types for our variables

In order to choose the data type, we first need to find the type of data we want to store. After that, we need to analyze the min & max value we might use.



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