

## Chapter 1 - Variables and datatypes

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. The set of these rules is called syntax.

↳ Vocabulary & 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;`  
Data type      variable name      Value it stores!

### Rules for declaring a variable name

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

- 1> Must not begin with a digit → `int 1arry;` is invalid!
- 2> Name is case sensitive → `harry` and `Harry` are different!
- 3> Should not be a keyword (like `void`)
- 4> White space not allowed. → `int Code With Harry;` is invalid
- 5> 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. → variables must be declared before use!

There are 8 primitive data types supported by Java:

- 1> byte →
  - Value ranges from -128 to 127
  - Takes 1 byte
  - Default value is 0
- 2> short →
  - Value ranges from  $-(2^{16})/2$  to  $(2^{16})/2 - 1$
  - Takes 2 bytes
  - Default value is 0
- 3> int →
  - Value ranges from  $-(2^{32})/2$  to  $(2^{32})/2 - 1$
  - Takes 4 bytes
  - Default value is 0
- 4> float →
  - Value ranges from (See Docs)
  - Takes 4 bytes
  - Default value is 0.0f
- 5> long →
  - Value ranges from  $-(2^{64})/2$  to  $(2^{64})/2 - 1$
  - Takes 8 bytes
  - Default value is 0
- 6> double →
  - Value ranges from (See docs)
  - Takes 8 bytes
  - Default value is 0.0d
- 7> char →
  - Value ranges from 0 to 65535 ( $2^{16} - 1$ )
  - Takes 2 bytes → because it supports unicode
  - Default value is '\u0000'

8, boolean →

- Value can be true or false
- Size depends on JVM
- Default value is false

Quick Quiz : Write a Java program to add three numbers.