



JAVA Data Types and Variables





Data Types



There are two data types available in Java –

Primitive Data Types

The primitive data types include boolean, char, byte, short, int, long, float and double.

Reference/Object Data Types

The non-primitive data types include Classes, Interfaces, and Arrays.

Specify the type of data and the length of the data item in bytes

- int, short, long
- float, double
- boolean
- char



Data Types



These can be put in four groups:

- Integers This group includes **byte, short, int, and long**, which are for whole-valued signed numbers.
- Floating-point numbers This group includes **float and double**, which represent numbers with fractional precision.
- Characters This group includes **char**, which represents symbols in a character set, like letters and numbers.
- Boolean This group includes boolean, which is a special type for representing **true/false** values.

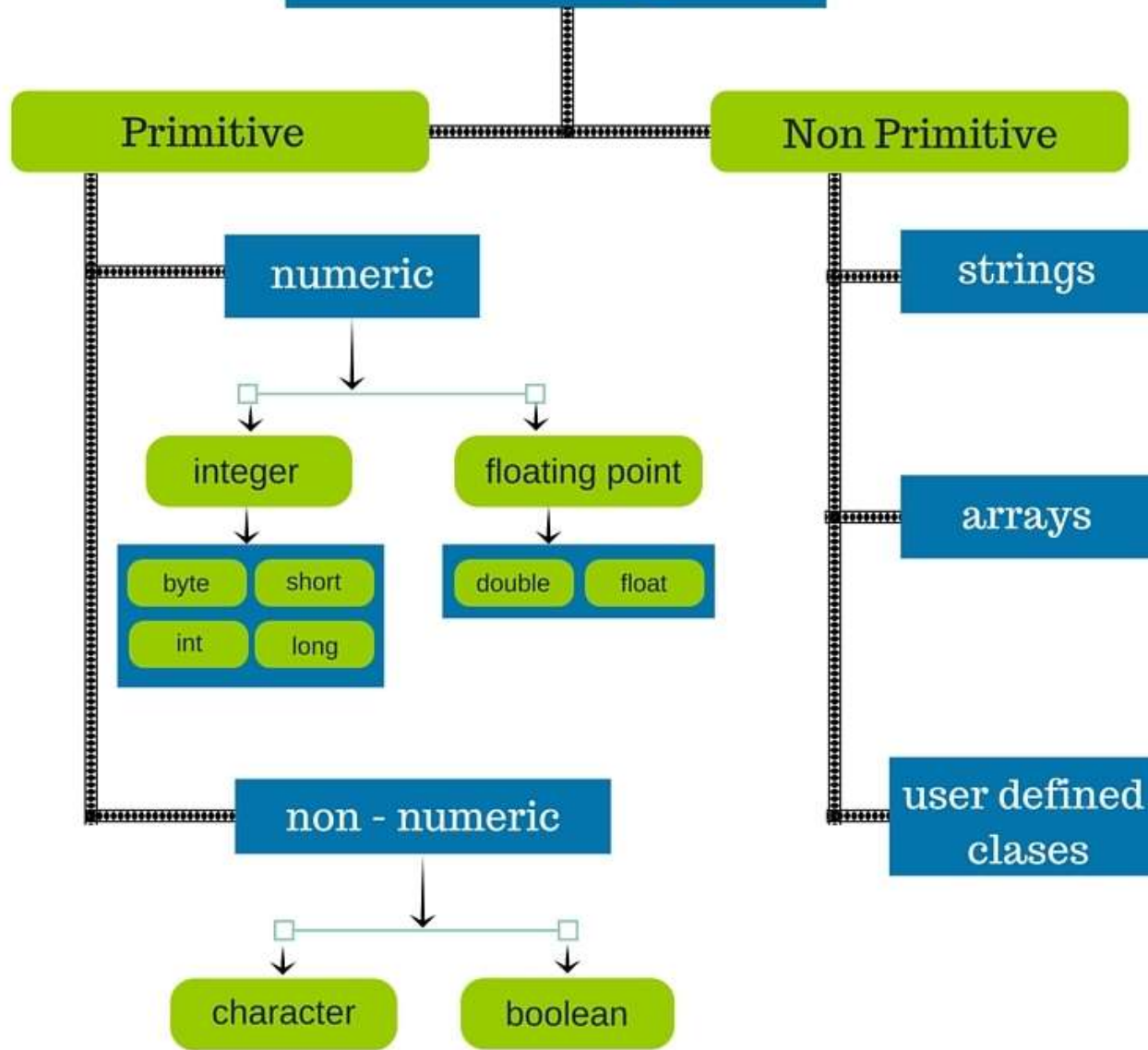


Data Types

Reserved Word	Data Type	Size	Range of Values
byte	Byte Length Integer	1 bytes	-2^8 to $2^7 - 1$
short	Short Integer	2 bytes	-2^{16} to $2^{16} - 1$
int	Integer	4 bytes	-2^{32} to $2^{31} - 1$
long	Long Integer	8 bytes	-2^{64} to $2^{63} - 1$
float	Single Precision	4 bytes	-2^{32} to $2^{31} - 1$
double	Real number with double	8 bytes	-2^{64} to $2^{62} - 1$
char	Character (16 bit unicode)	2 bytes	0 to $2^{16} - 1$
boolean	Has value true or false	A boolean value	true or false



Data Types





Variables



- The variable is the basic unit of storage in a Java program. A variable is defined by the combination of an identifier, a type, and an optional initializer.
- In addition, all variables have a scope, which defines their visibility, and a lifetime.

Declaring a Variable

- In Java, all variables must be declared before they can be used. The basic form of a variable declaration is shown here:
- `type identifier [= value][, identifier [= value] ...];`
- Type is the data type
- Identifier is the name of variable.



Variables



```
int a, b, c;           // declares three ints, a, b, and c.
int d = 3, e, f = 5;  // declares three more ints, initializing
                     // d and f.
byte z = 22;          // initializes z.
double pi = 3.14159; // declares an approximation of pi.
char x = 'x';         // the variable x has the value 'x'.
```