

# DATA TYPES -VARIABLES AND LITERALS

## Data Types:

- Data is an important part of a program which is said as the ingredient of a program
- Variables are meant to store data.
- Data is stored only after the variable is declared.
- Data can be both signed and unsigned.
- Negative numbers are stored in the form of 2's complement

There are Basic built-in datatypes in the compiler of java.

There are four categories of primitive datatypes:

- Integral – they can have any numerical value without decimal point.
  - Float – Have numerical value with decimal point.
  - Char – for storing characters.
  - Boolean – for storing true or false.
  - Integral data type is divided depending on the size
    - byte
    - short
    - int
    - long.
    -
- Floating point is divided depending on the precision size –
- float -- decimal point is known as float as the decimal point is floated away.

Example: 163.25 is written in the form of mantissa and exponent as  
 $16325 \times 10^{-2}$  i.e 16325E-2.

IEEE standard number 754.

- double – for more precise value after decimal.

→ Char values have 2 bytes (\*Java uses Unicode).

- ASCII codes are subset of UNICODE

For A-Z = 65-90

a-z = 97-122

0-9 = 48-57

- Boolean – True is represented using 'true'.  
False is represented using 'false'.

## Variables

- Variables are names given to store data in memory allocation.
- Variables are to be declared and initialised.

### ➤ Rules to name variables:

- variable names differ in upper and lower cases.
- contains alphabets, numbers and \_, \$.
- variables may start with an alphabet or \_, \$.
- it should not contain built-in words like int, float, if, while etc.
- it should not contain the built-in class names.
- name can be as long as possible.
- follow camel cases example- Roll Number, Average Marks.

## Literals

- constant values(numbers) used in a program.
- there are different types of literals:
  - int literals- representing integer type.
  - float and double literals- representing decimal type.
  - char literals-representing characters in single quotes.
  - string literals-representing characters in double quotes.
- Literals are written based upon the data types:
  - int literal – int, short and byte.
  - int literals can be represented in different number systems:
    - Decimal.
    - Binary.
    - Octal.
    - Hexadecimal.
  - L or l – long.
  - F or f – float.
  - D or d – double.
  - " – char.
  - true/false – Boolean.
- [www.unicode.org](http://www.unicode.org)