Basic Data Types

- We understand the C supports many different types of variables and types of variable is used for storing different kinds of data :
    - ➔ Types that store integers
    - ➔ Types that store non-integral numerical values
    - ➔ Types that store characters
- Some examples of basic data types in C are:
  int
  float
  double
  char
  _Bool

- The difference between the types is in the amount of memory they occupy and the range of the values they can hold:
    - ➔ The amount of storage that is allocated to store a particular type of data
    - ➔ Depends on the computer you are running (machine- dependent)
    - ➔ An integer might take up 32bits on your computer , or perhaps it might be stored in 64.

int

- A variable of type int can be used to contain integral values only (values that do not contain decimal places)
- A minus sign preceding the data type and variable indicates that the value is negative.
- The int type is a signed integer.
    - ➔ It must be an integer and it can be positive, negative, or Zero.
- If an integer is preceded by a zero and the letter x (either lowercase it uppercase), the value is taken as being expressed in hexadecimal (based 16) notation.
    - ➔ int rbgColor = 0xFFEF0D;
- The values 158, -10, and 0 are all valid examples of integer constants
    - ➔ No embedded space are permitted between the digits
    - ➔ Values larger than 999 cannot be expressed using commas (12,000 must be written as 12000)

float

- A variable to be of type float can be used for storing floating-point numbers (values containing decimal places)
- The values 3., 125.8, -.0001 are all valid examples of floating-point constants that can be assigned to a variable .
- Floating-point constants can also be expressed in scientific notation.
    - ➔ 1.7e4 is a floating-point value expressed in this notation and represents the value 1.7 x 10 to the power of 4.

double

- The double type is the same as type float, only with roughly twice the precision.
    - ➔ Used whenever the range provided by a float variable is not sufficient.
    - ➔ Can store twice as many significant digits
    - ➔ Most computers represent double values using 64bits.
- All floating-point constants are taken as double values by the C compiler
- To explicitly express a float constant, append either an f or F to the end of the number.
    - ➔ 12.5f

_Bool

- The _Bool data type can be used to store just the values 0 or 1
    - ➔ Used for indicating an on/off , yes/no, or true/false situation (binary choices)
- _Bool variables are used in programs that need to indicate a Boolean condition.
    - ➔ A variable of this type might be used to indicate whether all data has been read from a file
- 0 is used to indicate a false value
- 1 indicate a true value