**Python**

Introduction to python:

* It is an object oriented programming language and high level & scripting language.
* It is introduced by Guido Van Rossum in 1991.
* Python uses **.py** extension
* Now we are using **3.13.0 version** to do python
* It will have libraries, packages, modules, frameworks etc.
* It will execute the code by line by line. And it will give fast o/p and it will show the error in which line there is an error
* Python is used in various domains like
* Web Development
* Data Science
* Machine Learning
* Automation
* Game Development

Numerical Datatype

Numerical Datatype: Numerical datatypes represent values that can be used in mathematical operation.

There are three types:

1. Integer Datatype
2. Float Datatype
3. Complex Datatype

Integer Datatype(int):

* It is a whole number that can be positive values, negative values, or zero
* It does not take fractional or decimal components
* Integers are used in counting, mathematical operation

For example: …..-2,-1,0,1,2…..

* It will take (-infinity to +infinity) including with Zero

Eg: Where a=20 b=7

a = 20  
b = 7  
print(a+b)

output: 27

Float Datatype(float):

* It is used to represent the real numbers with decimal points or in fractional numbers.

**Eg: 0.1, 2.4, ½ = 0.5…..etc.**

* It is used in real life to see the measurement like distance, temp, calculations requiring dynamic scaling of numbers & values
* In Python floats use 64-bit double precision (IEEE 754 standard)
* IEEE stand for Institute of Electrical and Electronics Engineers.
* 1 bit for the sign
* 11 bits for the exponents
* 52 bits for the fraction

Eg: where a = 4.7

b = 1.7

a=4.7  
b=1.9  
print(a+b)

Output: 6.6

Complex Datatype:

* In complex datatype it represents complex numbers it contains like one real number and one imaginary number

Eg: a + bj 🡺 8+3j (or) 8-3j

Where ‘a’ is real part and ‘b’ is imaginary part and

‘j’ it represents the square root of “-1” (imaginary unit)

* It is mostly used in maths, signal etc.

Where a=3+4j b=5+3j

a=3+4j  
b=5+3j  
print(a+b)

Output: 8+7j

Where a=7+9j b=9-4j

a=7+9j  
b=9-4j  
print(a-b)

Output: -2+13j