8:30 AM -- BASIC PYTHON PROGRAMMING TODAY

In [1]:
```
import sys
sys.version
```

Out[1]: '3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]'

work with numbers

In [2]:
```
3
```

Out[2]: 3

In [3]:
```
2
```

Out[3]: 2

In [4]:
```
3 + 2
```

Out[4]: 5

In [5]:
```
3 - 2
```

Out[5]: 1

In [6]:
```
3 * 2
```

Out[6]: 6

In [7]:
```
3 ** 2
```

Out[7]: 9

In [8]:
```
10 / 5
```

Out[8]: 2.0

In [9]:
```
10 // 5
```

Out[9]: 2

In [10]:
```
# work with string
```

In [11]:
```
1 nareshit
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\2904615919.py in <module>
----> 1 nareshit

NameError: name 'nareshit' is not defined
```

In [12]:
```
1 'nareshit'
```

Out[12]:
```
'nareshit'
```

In [13]:
```
1 " nareshit "
```

Out[13]:
```
' nareshit '
```

In [14]:
```
1 ''' naresh it '''
```

Out[14]:
```
' naresh it '
```

variable = object

In [15]:
```
1 v = 5 #v - variable & 5 for value
2 v
```

Out[15]:
```
5
```

In [16]:
```
1 type(v)
```

Out[16]:
```
int
```

In [17]:
```
1 v1 = 'nit'
2 v2
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\3818531641.py in <module>
      1 v1 = 'nit'
----> 2 v2

NameError: name 'v2' is not defined
```

In [18]:
```
1 v1
```

Out[18]:
```
'nit'
```

26 Th

In [19]:
```
1 a = 5.5
2 type(a)
```

Out[19]:
```
float
```

In [22]:
```
1 import sys
2 sys.version
```

Out[22]:
```
'3.9.13 (main, Aug 25 2022, 23:51:50) [MSC v.1916 64 bit (AMD64)]'
```

In [23]:
```
1 nit = 15
2 NIT
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\282885081.py in <module>
      1 nit = 15
----> 2 NIT

NameError: name 'NIT' is not defined
```

In [24]:
```
1 nit
```

Out[24]:
```
15
```

In [25]:
```
1 1a = 67
2 1a
```

```
  File "C:\Users\Lenovo\AppData\Local\Temp\ipykernel_9380\3794310268.py", lin
e 1
    1a = 67
     ^
SyntaxError: invalid syntax
```

In [26]:
```
1 a1 = 67
2 a1
```

Out[26]:
```
67
```

In [27]:
```
1 nit$ = 89
2 nit$
```

```
  File "C:\Users\Lenovo\AppData\Local\Temp\ipykernel_9380\629152561.py", line 1
    nit$ = 89
       ^
SyntaxError: invalid syntax
```

In [28]:
```
1 x_train, x_test, y_train, y_test = 80, 20, 70, 30
2
```

In [29]:
```
1 x_train
2 x_test
3 y_train
4 y_test
```

Out[29]:
```
30
```

In [30]:
```
1 print(x_train)
2 print(x_test)
3 print(y_train)
4 print(y_test)
```

```
80
20
70
30
```

In [31]:
```
import keyword
keyword.kwlist
```

Out[31]:
```
['False',
 'None',
 'True',
 '__peg_parser__',
 'and',
 'as',
 'assert',
 'async',
 'await',
 'break',
 'class',
 'continue',
 'def',
 'del',
 'elif',
 'else',
 'except',
 'finally',
 'for',
 'from',
 'global',
 'if',
 'import',
 'in',
 'is',
 'lambda',
 'nonlocal',
 'not',
 'or',
 'pass',
 'raise',
 'return',
 'try',
 'while',
 'with',
 'yield']
```

In [32]:
```
if = 90
if
```

```
  File "C:\Users\Lenovo\AppData\Local\Temp\ipykernel_9380\3964871498.py", lin
e 1
    if = 90
       ^
SyntaxError: invalid syntax
```

In [33]:
```
a10 = 78
a9 = 89
```

In [34]:
```
print(a10)
print(a9)
```

```
78
89
```

In [35]:
```
del a10
```

In [36]:
```
a10
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\2318078267.py in <module>
----> 1 a10

NameError: name 'a10' is not defined
```

In [37]:
```
for = 90
```

```
  File "C:\Users\Lenovo\AppData\Local\Temp\ipykernel_9380\2697860034.py", lin
e 1
    for = 90
        ^
SyntaxError: invalid syntax
```

In [38]:
```
For = 90
For
```

Out[38]:
```
90
```

In [39]:
```
a = True
a
```

Out[39]:
```
True
```

In [40]:
```
b = 'true'
b
```

Out[40]:
```
'true'
```

In [41]:
```
pi = 3.17
pi
```

Out[41]:
```
3.17
```

In [42]:
```
pi = 3.20
pi
```

Out[42]: 3.2

In [43]:
```
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa = 90
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

Out[43]: 90

In [44]:
```
a# = 100
```

Out[44]: True

Variable are completed

27th -- DATA TYPES

INT FLOAT BOOLEAN COMPLEX STRING

In [45]:
```
i = 25 #value without decimal
i
```

Out[45]: 25

In [46]:
```
type(i)
```

Out[46]: int

In [47]:
```
print(type(i))
```

```
<class 'int'>
```

In [48]:
```
petrol = 109.50 #value with decimal
petrol
```

Out[48]: 109.5

In [49]:
```
type(petrol)
```

Out[49]: float

In [50]:
```
1 b = true
2 b
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\490957354.py in <module>
----> 1 b = true
      2 b

NameError: name 'true' is not defined
```

In [51]:
```
1 b = True
2 b
```

Out[51]: True

In [52]:
```
1 b1 = False
2 b1
```

Out[52]: False

In [53]:
```
1 True + False
```

Out[53]: 1

In [54]:
```
1 True -  True
```

Out[54]: 0

In [55]:
```
1 True * False
```

Out[55]: 0

In [56]:
```
1 False / True
```

Out[56]: 0.0

In [57]:
```
1 False // True
```

Out[57]: 0

In [58]:
```
1 True/False
```

```
---------------------------------------------------------------------------
ZeroDivisionError                         Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\4104310761.py in <module>
----> 1 True/False

ZeroDivisionError: division by zero
```

In [59]:
```
c1 = 10 + 20j
c1
```

Out[59]: (10+20j)

In [60]:
```
type(c1)
```

Out[60]: complex

In [61]:
```
c1.real
```

Out[61]: 10.0

In [62]:
```
c1.imaginary
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\2633684790.py in <module>
----> 1 c1.imaginary

AttributeError: 'complex' object has no attribute 'imaginary'
```

In [63]:
```
c1.imag
```

Out[63]: 20.0

In [64]:
```
c1
```

Out[64]: (10+20j)

In [65]:
```
c2 = 20 + 30j
```

In [66]:
```
print(c1)
print(c2)
```

```
(10+20j)
(20+30j)
```

In [67]:
```
c1 + c2
```

Out[67]: (30+50j)

In [68]:
```
c1 - c2
```

Out[68]: (-10-10j)

In [69]:
```
c2 - c1
```

Out[69]: (10+10j)

In [70]:
```
print(c1)
print(c2)
```

```
(10+20j)
(20+30j)
```

In [71]:
```
c3 = 20+ 15i
```

```
  File "C:\Users\Lenovo\AppData\Local\Temp\ipykernel_9380\3009368113.py", lin
e 1
    c3 = 20+ 15i
                ^
SyntaxError: invalid syntax
```

In [72]:
```
c1 * c2
```

Out[72]: (-400+700j)

In [73]:
```
s = 'nareshit'
s
```

Out[73]: 'nareshit'

In [74]:
```
s1 = "naresh it"
s1
```

Out[74]: 'naresh it'

In [75]:
```
s2 = '''naresh
      it'''
s2
```

Out[75]: 'naresh\n   it'

In [76]:
```
s
```

Out[76]: 'nareshit'

string slicing[:]

In [77]:
```
s
```

Out[77]: 'nareshit'

In [78]:
```
s[:]
```

Out[78]: 'nareshit'

In [79]:
```
s[4] # forward indexin
```

Out[79]: 's'

In [80]:
```
s
```

Out[80]: 'nareshit'

In [81]:
```
s[-4] #backward indxing
```

Out[81]: 's'

In [82]:
```
b
```

Out[82]: True

In [83]:
```
int(True)
```

Out[83]: 1

In [84]:
```
int(False)
```

Out[84]: 0

In [85]:
```
True + False
```

Out[85]: 1

In [86]:
```
True
```

Out[86]: True

In [87]:
```
s
```

Out[87]: 'nareshit'

In [88]:
```
s[1:7]
```

Out[88]: 'areshi'

In [89]:
```
s
```

Out[89]: 'nareshit'

In [90]:
```
1 s[10]
```

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\1733316026.py in <module>
----> 1 s[10]

IndexError: string index out of range
```

In [91]:
```
1 s
```

Out[91]: 'nareshit'

In [92]:
```
1 len(s)
```

Out[92]: 8

python data types are completed

type casting

In [93]:
```
1 int(2.3) #cast from float to int
```

Out[93]: 2

In [94]:
```
1 int(2.3, 3.0)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\1747341307.py in <module>
----> 1 int(2.3, 3.0)

TypeError: 'float' object cannot be interpreted as an integer
```

In [95]:
```
1 int(True) #cast from bool to int
```

Out[95]: 1

In [96]:
```
1 int(False)
```

Out[96]: 0

In [97]:
```
1 True
```

Out[97]: True

In [98]:
```
1 True + True
```

Out[98]: 2

In [99]:
```
1 int(1+2j)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\1854362543.py in <module>
----> 1 int(1+2j)

TypeError: can't convert complex to int
```

In [100]:
```
1 int('10')
```

Out[100]: 10

In [101]:
```
1 int('ten')
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\3170945453.py in <module>
----> 1 int('ten')

ValueError: invalid literal for int() with base 10: 'ten'
```

In [102]:
```
1 float(10)
```

Out[102]: 10.0

In [103]:
```
1 float(10, 20)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\2079212062.py in <module>
----> 1 float(10, 20)

TypeError: float expected at most 1 argument, got 2
```

In [104]:
```
1 float(True)
```

Out[104]: 1.0

In [105]:
```
1 float(False)
```

Out[105]: 0.0

In [106]:
```
1 float(1+2J)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\3107152968.py in <module>
----> 1 float(1+2J)

TypeError: can't convert complex to float
```

In [107]:
```
1 float('10')
```

Out[107]:
```
10.0
```

In [108]:
```
1 float('ten')
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\3331339187.py in <module>
----> 1 float('ten')

ValueError: could not convert string to float: 'ten'
```

In [109]:
```
1 True
```

Out[109]:
```
True
```

In [110]:
```
1 True + True
```

Out[110]:
```
2
```

In [111]:
```
1 complex(10)
```

Out[111]:
```
(10+0j)
```

In [112]:
```
1 complex(10, 20)
```

Out[112]:
```
(10+20j)
```

In [113]:
```
1 complex(10,20,30,40,50)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\1246720270.py in <module>
----> 1 complex(10,20,30,40,50)

TypeError: complex() takes at most 2 arguments (5 given)
```

In [114]:
```
1 complex(2.3)
```

Out[114]: (2.3+0j)

In [115]:
```
1 complex(2.3, 4)
```

Out[115]: (2.3+4j)

In [116]:
```
1 complex(True, True)
```

Out[116]: (1+1j)

In [117]:
```
1 complex(False)
```

Out[117]: 0j

In [118]:
```
1 complex('10')
```

Out[118]: (10+0j)

In [119]:
```
1 complex('10', '20')
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\1748463293.py in <module>
----> 1 complex('10', '20')

TypeError: complex() can't take second arg if first is a string
```

```
1 ## Task_3 _ 28th - type_casting
  python_print_statement complex_data_type
```

Python_print_statement

In [122]:
```
1 a=10
2 b=20
3
4 a
5 b
```

Out[122]: 20

In [123]:
```
a=10
b=20

print(a)
print(b)
```

```
10
20
```

In [124]:
```
print(10,20,'python')
```

```
10 20 python
```

In [127]:
```
# print result with string
n1=10
n2=20
add = n1+n2
print('The addition of two numbers',n1 ,'and',n2, 'is',add)
```

```
The addition of two numbers 10 and 20 is 30
```

In [128]:
```
#print method format
print('The addition of two numbers {} and {} is {}'.format(n1,n2,add))
```

```
The addition of two numbers 10 and 20 is 30
```

In [129]:
```
avg=10/3
avg
```

Out[129]:
```
3.3333333333333335
```

In [130]:
```
round(avg,2)
```

Out[130]:
```
3.33
```

In [131]:
```
#print with f string

print(f'The addition of two numbers {n1} and {n2} is {add}')
```

```
The addition of two numbers 10 and 20 is 30
```

end statement

In [132]:
```
print('Hello')
print('Good Morning')
```

```
Hello
Good Morning
```

In [133]:
```
print('Hello',end=' ')
print('Good Morning')
```

```
Hello Good Morning
```

seprator

In [134]:
```
print('hello','hai','how are you',sep='---->')
```

```
hello---->hai---->how are you
```

In [136]:
```
print('hello','hai','how are you',sep=' && ')
```

```
hello && hai && how are you
```

In [137]:
```
print('hello','hai','how are you',sep=' @ ')
```

```
hello @ hai @ how are you
```

In [138]:
```
print(3,'.') # . is far from 3 so here we will use sep method
```

```
3 .
```

In [139]:
```
print(3,'.',sep='')
```

```
3.
```

In [140]:
```
print(1,2,end=' ')
print(3,'.',sep='')
```

```
1 2 3.
```

Complex Data Type

In [142]:
```
real =10
imaginary = 20

z= real + imaginary * 1j
z
```

Out[142]:
```
(10+20j)
```

In [143]:
```
z= real + imaginary * j
z
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_9380\3041321643.py in <module>
----> 1 z= real + imaginary * j
      2 z

NameError: name 'j' is not defined
```

In [144]:
```
z.real
```

Out[144]: 10.0

In [145]:
```
z.imag
```

Out[145]: 20.0

In [146]:
```
a = 3+ 4j
b= 1 + 2j
```

operations with complex numbers

In [147]:
```
a+b
```

Out[147]: (4+6j)

In [148]:
```
a-b
```

Out[148]: (2+2j)

In [149]:
```
a*b
```

Out[149]: (-5+10j)

In [151]:
```
a/b
```

Out[151]: (2.2-0.4j)

Using Built-in Function

In [153]:
```
z= 3 + 4j

print(abs(z))
```

```
5.0
```

In [154]:
```
1 z.conjugate()
```

Out[154]: (3-4j)

In [156]:
```
1 import cmath
2
3 z=1 + 1j
```

In [157]:
```
1 # Getting the phase (angle) of the complex number
2 print(cmath.phase(z))
```

```
0.7853981633974483
```

In [158]:
```
1 #Getting the polar form of the complex number
2 print(cmath.polar(z))
```

```
(1.4142135623730951, 0.7853981633974483)
```

In [159]:
```
1 #Getting the square root of a complex number
2 print(cmath.sqrt(z))
```

```
(1.09868411346781+0.45508986056222733j)
```

In [ ]:
```
1
```