simple numbers

```
In [2]:   4
```

```
Out[2]:   4
```

```
In [8]:   4 + 4 # addition operation
```

```
Out[8]:   8
```

```
In [10]:  4-3 # subraction
```

```
Out[10]:  1
```

```
In [12]:  4 * 3 # multiplication
```

```
Out[12]:  12
```

```
In [14]:  4 / 3 # simple division
```

```
Out[14]:  1.3333333333333333
```

```
In [16]:  4//3 # floor division
```

```
Out[16]:  1
```

```
In [26]:  4 % 5   #using modulous
```

```
Out[26]:  4
```

Numbers are operands and + - * / are operators

What are the different operators

- arithmetic operator
- assignment operator
- rational operator
- logical operator
- Unary operator

```
In [35]:   10 + 5
```

```
Out[35]:  15
```

```
In [36]:  10 - 5
```

```
Out[36]:  5
```

```
In [57]:  10 * 5
```

```
Out[57]:  50
```

```
In [58]:  10 /5
```

```
Out[58]:  2.0
```

```
In [61]:  10 ** 2 # 10 to the power of 2
```

```
Out[61]:  100
```

```
In [62]:  10 *** 2
```

```
  Cell In[62], line 1
    10 *** 2
          ^
SyntaxError: invalid syntax
```

Assignment Operator

```
In [106... x =10
          x
          # x is called variable or identifier or object
```

```
Out[106... 10
```

```
In [108... x + 2
```

```
Out[108... 12
```

```
In [110... x += 2
          x
```

```
Out[110... 12
```

```
In [114... x +=4
```

```
In [116... x
```

```
Out[116...   16
```

```
In [120...    x +=3
```

```
In [122...    x
```

```
Out[122...   19
```

```
In [138...    x -=1
             x
```

```
Out[138...   18
```

```
In [140...    x *=2
```

```
In [143...    x
```

```
Out[143...   36
```

```
In [145...    x /=2
             x
```

```
Out[145...   18.0
```

unary operator

```
In [190...    n =7
             n
```

```
Out[190...   7
```

```
In [192...    m =-n
             m
```

```
Out[192...   -7
```

Variable and its valid and invalid declaration

```
In [207...    1nit =6 # this is invalid declartion od variable
```

```
  Cell In[207], line 1
    1nit =6 # this is invalid declartion od variable
      ^
SyntaxError: invalid decimal literal
```

```
In [213...    test # only variable cannot declare without assigning value
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[213], line 1
----> 1 test

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

```
In [224...    nit$ = 'test' # valid with these kind of special characters are not allowed
             nit$
```

```
  Cell In[224], line 1
    nit$ = 'test' # valid with these kind of special characters are not allowed
       ^
SyntaxError: invalid syntax
```

```
In [226...    test_ = 123 # vaid way pf delcaring the varaible as only '_' underscore is allowed
             test_
```

```
Out[226...   123
```

```
In [240...    type(test_)
```

```
Out[240...   int
```

```
In [242...    def = 123455 # python defined keywords are not allowed
```

```
  Cell In[242], line 1
    def = 123455 # python defined keywords are not allowed
        ^
SyntaxError: invalid syntax
```

```
In [244...    import keyword
             keyword.kwlist
```

Out[244... `['False',`
`'None',`
`'True',`
`'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 [248...
```python
len(keyword.kwlist) # to know the keywords count
```

Out[248... 35

In [250...
```python
import sys
sys.version
```

Out[250... `'3.12.7 | packaged by Anaconda, Inc. | (main, Oct  4 2024, 13:17:27) [MSC v.1929 64 bit (AMD64)]'`

In [260...
```python
a = 10
print(a)
```

10

In [262...
```python
a= 'test'
print(a)
```

test

Python data types

- integer
- float
- complex
- string
- boolean

In [281...
```python
i =45
print(i)
```

45

In [283...
```python
type(i)
```

Out[283... int

In [367...
```python
print(type(i))
```

<class 'int'>

In [368...
```python
i2,i3 = 10, 20
```

In [369...
```python
print(i2)
print(i3)
```

10
20

In [370...
```python
print(i2 + i3)
print(i2 - i3)
print(i2 * i3)
print(i2 / i3)
```

30
-10
200
0.5

float

In [372...
```python
petrol = 110.6
petrol
```

Out[372...   110.6

string

In [379...   `s = nareshit`

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[379], line 1
----> 1 s = nareshit

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

In [ ]:   `s ='nareshit' # single quote string declaration`

In [382...   `s`

Out[382...   `'nareshit'`

In [384...   `type(s)`

Out[384...   `str`

In [385...   `s1 = "nareshit" # double quote string declaration`

In [388...   `s1`

Out[388...   `'nareshit'`

In [389...
```
# triple ''' quote for strind declaration
s2 = '''Learning ai and data science
        at
        nareshit'''
print(s2)
```

```
Learning ai and data science
        at
        nareshit
```

In [390...   `type(s2)`

Out[390...   `str`

In [394...   `print(type(s2))`

```
<class 'str'>
```

In [395...   `s2[0]`

Out[395...   `'L'`

In [396...   `s2[-1]`

Out[396...   `'t'`

In [397...   `s2[2:3]`

Out[397...   `'a'`

In [402...   `s2[3:7]`

Out[402...   `'rnin'`

boolean

In [443...   `true # boolean is a case sensitive`

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[443], line 1
----> 1 true

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

In [445...   `True`

Out[445...   `True`

In [447...   `False`

Out[447...   `False`

In [451...
```
b = True
b
```

Out[451...   `True`

Complex data type

In [467...
```
a1 = 1 + 4j
a1
```

```
Out[467…   (1+4j)
```

```
In [469…   type(a1)
```

```
Out[469…   complex
```

```
In [471…   print(type(a1))
```

```
<class 'complex'>
```

```
In [473…   print(a1.real)
```

```
1.0
```

```
In [479…   print(a1.imag)
```

```
4.0
```

type casting or type coversion

```
In [488…   int(True, False) # only one argumnet is allowed.
```

```
---------------------------------------------------------------------
TypeError                               Traceback (most recent call last)
Cell In[488], line 1
----> 1 int(True, False)

TypeError: int() can't convert non-string with explicit base
```

```
In [492…   #data types such as  boolean, integer, float to another type are supportable. But, other data types such as complex and string casting are not supported
           print(int(20))
           print(int(12.6))
           print(int(True))
           print(int('20')) # only allowed when string is of number text and conversion would be successfull.
```

```
20
12
1
20
```

```
In [502…   print(bool('12'))
           print(bool(27.4))
           print(bool(34))
           print(bool(1+ 2j))
           print(bool(True == False))
```

```
True
True
True
True
False
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```

```
In [ ]:
```