Arithmetic Operations in Python

Integers

In [35]:
```
print('Addition: ', 59 + 2)
```

```
Addition:  61
```

In [37]:
```
print('Subtraction: ', 59 - 1)
```

```
Subtraction:  58
```

In [39]:
```
print('multiplication:',2*9)
```

```
multiplication: 18
```

In [41]:
```
print('division:',12/4)
```

```
division: 3.0
```

In [45]:
```
print('division:',91//8)  # Division in python gives floating number
```

```
division: 11
```

In [47]:
```
print('division:',84/2)
```

```
division: 42.0
```

In [49]:
```
print('division:',94/2)
```

```
division: 47.0
```

In [51]:
```
print('Divison without Remainder:',98//2) # gives without the floating number or
```

```
Divison without Remainder: 49
```

In [55]:
```
print('Modulus :print', 9%2) # Gives the remainder
```

```
Modulus :print 1
```

In [53]:
```
print('Exponential: ', 4** 2)            # it means 3 * 3
```

```
Exponential:  16
```

In [57]:
```
print ('Division without the remainder: ', 91 // 3)
```

```
Division without the remainder:  30
```

In [59]:
```
print('Exponential: ', 5 ** 2)                    # it means 3 * 3
```

```
Exponential:  25
```

Floating numbers

In [32]:
```
print('Floating Number,PI', 3.14)
print('Floating Number, gravity', 9.81)
```

```
Floating Number,PI 3.14
Floating Number, gravity 9.81
```

In [77]:
```
print('Complex number: ', 10 + 4j)
```

```
Complex number:  (10+4j)
```

In [79]:
```
print('Multiplying complex number: ',(10 + 4j) * (9-8j))
```

```
Multiplying complex number:  (122-44j)
```

In [135…
```
# Declaring the variable at the top first
a = 48 # a is a variable name and 3 is an integer data type
b = 2 # b is a variable name and 3 is an integer data type
# Arithmetic operations and assigning the result to a variable
total = a + b
print('a + b = ', total)
```

```
a + b =  50
```

In [139…
```
difference = a - b
print('a - b = ', difference)
```

```
a - b =  46
```

In [141…
```
multiplication = a*b
print('a * b = ', multiplication)
```

```
a * b =  96
```

In [143…
```
division = a / b
print('a / b = ', division)
```

```
a / b =  24.0
```

In [145…
```
remainder = a % b
print('a % b = ', remainder)
```

```
a % b =  0
```

In [147…
```
floor_division = a // b
print('a // b = ', floor_division)
```

```
a // b =  24
```

In [149…
```
exponential = a ** b
print('a ** b = ', exponential)
```

```
a ** b =  2304
```

In [113…
```
print(total)
```

```
5
```

In [151…
```
print(total)
```

```
50
```

In [153…
```
# Declaring values and organizing them together
num_one = 3
num_two = 4
```

In [155…
```
total = num_one + num_two
print('total: ', total)
```

```
total:  7
```

In [159…
```
diff = num_two - num_one
print('diff:',diff)
```

```
diff: 1
```

In [161…
```
product = num_one * num_two
print('product:',product)
```

```
product: 12
```

In [163…
```
div = num_two / num_two
print('division: ', div)
```

```
division:  1.0
```

In [165…
```
remainder = num_two % num_one
print('remainder: ', remainder)
```

```
remainder:  1
```

In [169…
```
# Calculating area of a circle
radius = 8.6                                    # radius of a circle
area_of_circle = 3.14 * radius ** 2         # two * sign means exponent or power
print('Area of a circle:', area_of_circle)
```

```
Area of a circle: 232.2344
```

In [171…
```
# Calculating area of a rectangle
length = 10
width = 20
area_of_rectangle = length * width
print('Area of rectangle:', area_of_rectangle)
```

```
Area of rectangle: 200
```

In [181…
```
# Calculating a weight of an object
mass = 75
gravity = 9.81
weight = mass * gravity
print('weight of object(N):',weight)
```

```
weight of object(N): 735.75
```

In [211…
```
print(3 > 2)
```

```
True
```

In [213…
```
print(3 >= 2)
```

```
True
```

In [215…
```
print(3 < 2)
```

```
False
```

In [217…
```
print(2 < 3)
```

```
True
```

In [219…
```
print(2 <= 3)
```

```
True
```

In [221…
```
print(3 == 2)
```
```
False
```

In [223…
```
print(3 != 2)
```
```
True
```

In [197…
```
print(len('mango') == len('avocado'))  # False
```
```
False
```

In [199…
```
print(len('mango')!=len('avacado')) #True
```
```
True
```

In [201…
```
print(len('mango')<=len('avacado'))
```
```
True
```

In [203…
```
print(len('milk')!=len('meat'))
```
```
False
```

In [205…
```
print(len('milk')==len('meat'))
```
```
True
```

In [209…
```
print(len('tomato') == len('potato'))  # True
```
```
True
```

In [207…
```
print(len('python') > len('dragon'))   # False
```
```
False
```

In [225…
```
# Boolean comparison
print('True == True: ', True == True)
```
```
True == True:  True
```

In [227…
```
print('True == False: ', True == False)
```
```
True == False:  False
```

In [229…
```
print('False == False:', False == False)
```
```
False == False: True
```

In [231…
```
print('True and True: ', True and True)
```
```
True and True:  True
```

In [233…
```
print('True or False:', True or False)
```
```
True or False: True
```

In [237…
```
# Another way comparison
print('1 is 1', 1 is 1)
```
```
1 is 1 True
```

```
<>:2: SyntaxWarning: "is" with a literal. Did you mean "=="?
<>:2: SyntaxWarning: "is" with a literal. Did you mean "=="?
C:\Users\Sai Vamshi\AppData\Local\Temp\ipykernel_12684\3171794965.py:2: SyntaxWar
ning: "is" with a literal. Did you mean "=="?
  print('1 is 1', 1 is 1)
```

string line comment

In [370…
```
letter='p'
letter
```

Out[370…
```
'p'
```

In [372…
```
btech='gurunanak college of engineering'
btech
```

Out[372…
```
'gurunanak college of engineering'
```

In [374…
```
print(letter)
```

```
p
```

In [376…
```
print(btech)
```

```
gurunanak college of engineering
```

In [378…
```
print(len(btech))
```

```
32
```

In [380…
```
sentence = "I hope you are enjoying 30 days of python challenge"
print(sentence)
```

```
I hope you are enjoying 30 days of python challenge
```

In [386…
```
my_role='''i am currently pursuing an Bachlor's of engineering.
          In stream of AT&DS'''
```

In [388…
```
my_role
```

Out[388…
```
"i am currently pursuing an Bachlor's of engineering.\n          In stream of A
T&DS"
```

In [390…
```
multiline_string = '''I am a student and enjoy learning.
That is why I want to learn 30 days of python.'''
```

In [392…
```
print(multiline_string)
```

```
I am a student and enjoy learning.
That is why I want to learn 30 days of python.
```

string concatination

In [409…
```
name1='sai'
name2='vamshi'
```

In [411…
```
print(name1)
print(name2)
```

```
sai
vamshi
```

In [413…
```
name3=name1+name2
name3
```

Out[413…
```
'saivamshi'
```

In [417…
```
print(len(name3))
```

```
9
```

In [431…
```
intro1='''i am currently pursuing an Bachlor's of engineering.
          In stream of AT&DS'''
intro2='''i want to become data scientist'''
intro3='''and'''
print(intro1+intro3+intro2)
```

```
i am currently pursuing an Bachlor's of engineering.
          In stream of AT&DSandi want to become data scientist
```

In [433…
```
len(intro3+intro1+intro2)
```

Out[433…
```
115
```

unpacking charcaters

In [440…
```
Name = 'Sarvan'
a,b,c,d,e,f = Name # unpacking sequence characters into variables
print(a)
print(b)
print(c)
print(d)
print(e)
print(f)
```

```
S
a
r
v
a
n
```

In [444…
```
Name = 'Sarvan'
first_element=Name[0]
```

In [446…
```
first_element
```

Out[446…
```
'S'
```

In [448…
```
Name = 'Sarvan'
second_element=Name[2]
second_element
```

Out[448… 'r'

In [456…
```
last_index = len(Name)
last_index
```

Out[456… 6

In [458…
```
language = 'Python'
last_letter = language[-1]
print(last_letter)
```

n

In [460…
```
second_last = language[-2]
print(second_last)
```

o

In [464…
```
last_three=language[-3:]
last_three
```

Out[464… 'hon'

In [468…
```
last_three=language[3:]
last_three
```

Out[468… 'hon'

String Methods

```
# capitalize(): Converts the first character the string to
Capital Letter
```

In [472…
```
challenge="i will complete the task of strings"
print(challenge.capitalize())
```

```
I will complete the task of strings
```

In [478…
```
task= "thirty days i will learn python"
print(task.capitalize())
```

```
Thirty days i will learn python
```

2. count(): returns occurrences of substring in string, count(substring, start=.., end=..)

In [486…
```
challenge = 'thirty days of python'
print(challenge.count('y'))
```

3

In [488…
```
print(challenge.count('y', 7, 14))
```

1

In [490…
```
print(challenge.count('th'))
```

2

3. endswith(): Checks if a string ends with a specified ending

In [492…
```
challenge = 'thirty days of python'
print(challenge.endswith('on'))
```

```
True
```

In [494…
```
print(challenge.endswith('tion'))
```

```
False
```

4. expandtabs(): Replaces tab character with spaces, default tab size is 8. It takes tab size argument

In [500…
```
print(challenge.expandtabs())
```

```
thirty days of python
```

In [502…
```
print(challenge.expandtabs(10))
```

```
thirty days of python
```

4. find(): Returns the index of first occurrence of substring

In [506…
```
print(challenge.find('y'))
```

```
5
```

In [508…
```
print(challenge.find('th'))
```

```
0
```

5. format() formats string into nicer output

In [511…
```
first_name = 'Akshith'
last_name = 'Yadav'
job = 'teacher'
country = 'Finland'
sentence = 'I am {} {}. I am a {}. I live in {}.'.format(first_name, last_name,
print(sentence)
```

```
I am Akshith Yadav. I am a teacher. I live in Finland.
```

In [517…
```
radius = 10
pi = 3.14
area = pi
result = 'The area of circle with {} is {}'.format(str(radius),str(area))
print(result)
```

```
The area of circle with 10 is 3.14
```

5. isalnum(): Checks alphanumeric character

In [520…
```
challenge = 'myselfsai'
print(challenge.isalnum())
```

```
True
```

In [522…
```
challenge = 'myself sai'
print(challenge.isalnum())
```

```
False
```

In [524…
```
challenge = 'mynamesai'
print(challenge.isalnum())
```

```
True
```

In [526…
```
challenge = 'my_namesai'
print(challenge.isalnum())
```

```
False
```

In [528…
```
challenge = 'mysai'
print(challenge.isalnum())
```

```
True
```

6. swapcase(): Checks if String Starts with the Specified String

In [531…
```
challenge = 'thirty days of python'
print(challenge.swapcase())
```

```
THIRTY DAYS OF PYTHON
```

In [533…
```
challenge = 'Thirty Days Of Python'
print(challenge.swapcase())
```

```
tHIRTY dAYS oF pYTHON
```

4/4/25 (list)

In [2]:
```
list1=[]
```

In [4]:
```
print(type(list1))
```

```
<class 'list'>
```

In [6]:
```
list2=[10,20,30]
list2
```

Out[6]:
```
[10, 20, 30]
```

In [8]:
```
list3=[2.3,4.5,7.8,9.3]
list3
```

Out[8]:
```
[2.3, 4.5, 7.8, 9.3]
```

In [10]:
```
list4=['one','two','three']
list4
```

Out[10]:
```
['one', 'two', 'three']
```

In [12]:
```
list5=['asif',25,[50,100],[150,90]]
list5
```

Out[12]: ['asif', 25, [50, 100], [150, 90]]

In [14]:
```
print(type(list5))
```

```
<class 'list'>
```

In [16]:
```
list6=[100,'asif',17.987]
list6
```

Out[16]: [100, 'asif', 17.987]

In [18]:
```
len(list6)
```

Out[18]: 3

In [20]:
```
len(list5)
```

Out[20]: 4

In [22]:
```
len(list3)
```

Out[22]: 4

In [24]:
```
len(list1)
```

Out[24]: 0

In [28]:
```
list2[0]
```

Out[28]: 10

In [32]:
```
len(list4)
```

Out[32]: 3

In [36]:
```
list2[2]
```

Out[36]: 30

In [38]:
```
list4[0]
```

Out[38]: 'one'

In [40]:
```
print(list4)
```

```
['one', 'two', 'three']
```

In [42]:
```
list4[0][0]
```

Out[42]: 'o'

In [46]:
```
list4[0][2]
```

Out[46]: 'e'

In [48]:
```
list4[1][2]
```

Out[48]: 'o'

In [54]:
```
list4[2][4]
```

Out[54]: 'e'

In [56]:
```
list5[-1]
```

Out[56]: [150, 90]

list slicing

In [161…
```
mylist=['one','two','three','four','five','six','seven']
mylist
```

Out[161… ['one', 'two', 'three', 'four', 'five', 'six', 'seven']

In [163…
```
mylist[0:4]
```

Out[163… ['one', 'two', 'three', 'four']

In [165…
```
mylist[1:2]
```

Out[165… ['two']

In [167…
```
mylist[:]
```

Out[167… ['one', 'two', 'three', 'four', 'five', 'six', 'seven']

In [169…
```
mylist[:5]
```

Out[169… ['one', 'two', 'three', 'four', 'five']

In [171…
```
mylist[0:]
```

Out[171… ['one', 'two', 'three', 'four', 'five', 'six', 'seven']

In [173…
```
mylist[2:]
```

Out[173… ['three', 'four', 'five', 'six', 'seven']

In [175…
```
mylist[-2:]
```

Out[175… ['six', 'seven']

In [177…
```
mylist[:-2]
```

Out[177… ['one', 'two', 'three', 'four', 'five']

add remove &changes

In [180…
```
mylist
```

Out[180… ['one', 'two', 'three', 'four', 'five', 'six', 'seven']

In [182…
```
mylist.append('eight')
```

In [184…
```
mylist
```

Out[184… ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [186…
```
mylist.append('nine')
```

In [188…
```
mylist
```

Out[188… ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']

In [190…
```
len(mylist)
```

Out[190… 9

In [192…
```
mylist.index('nine')
```

Out[192… 8

In [194…
```
mylist.insert(8,'eight.one')
```

In [196…
```
mylist
```

Out[196…
```
['one',
 'two',
 'three',
 'four',
 'five',
 'six',
 'seven',
 'eight',
 'eight.one',
 'nine']
```

In [198…
```
mylist.remove('eight.one')
```

In [200…
```
mylist
```

Out[200… ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine']

In [202…
```
mylist.pop()
```

Out[202… 'nine'

In [204…
```
mylist
```

Out[204… ['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']

In [206…
```
mylist.pop(2)
```

Out[206… 'three'

In [210…
```
mylist
```

Out[210…
```
['one', 'two', 'four', 'five', 'six', 'seven', 'eight']
```

In [212…
```
mylist.insert(2,'three')
```

In [214…
```
mylist
```

Out[214…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight']
```

In [216…
```
del mylist[7]
```

In [218…
```
mylist
```

Out[218…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
```

In [220…
```
mylist.extend(list6)
```

In [222…
```
mylist
```

Out[222…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven', 100, 'asif', 17.987]
```

In [232…
```
mylist.count('four')
```

Out[232…
```
1
```

In [234…
```
mylist[1]=5
mylist[2]=6
mylist[0]=1
```

In [236…
```
mylist
```

Out[236…
```
[1, 5, 6, 'four', 'five', 'six', 'seven', 100, 'asif', 17.987]
```

In [238…
```
mylist.clear()
mylist
```

Out[238…
```
[]
```

In [242…
```
del mylist
mylist
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_25576\422619610.py in <module>
----> 1 del mylist
      2 mylist

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

In [244…
```
# copy list
list1=['one','two','three','four','five','six','seven']
list1
```

Out[244…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
```

In [252…
```
list=list1
```

In [254…
```
list
```

Out[254…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
```

In [256…
```
id(list),id(list1)
```

Out[256…
```
(2651937126464, 2651937126464)
```

In [258…
```
list2=list1.copy()
```

In [260…
```
list2
```

Out[260…
```
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
```

In [264…
```
print(list1)
print(list)
print(list2)
```

```
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
['one', 'two', 'three', 'four', 'five', 'six', 'seven']
```

In [266…
```
id(list2)
```

Out[266…
```
2651936882240
```

In [268…
```
id(list1)==id(list2)
```

Out[268…
```
False
```

join lists

In [271…
```
list1=['one','two','three','four']
list2=['five','seven','six','eight']
```

In [273…
```
print(list1)
print(list2)
```

```
['one', 'two', 'three', 'four']
['five', 'seven', 'six', 'eight']
```

In [275…
```
list3=list1+list2 # join symbol is used by '+' opertor
```

In [277…
```
list3
```

Out[277…
```
['one', 'two', 'three', 'four', 'five', 'seven', 'six', 'eight']
```

In [279…
```
list1.extend(list2)
```

In [281…
```
list1
```

Out[281…
```
['one', 'two', 'three', 'four', 'five', 'seven', 'six', 'eight']
```

In [305…
```
del list3
```

In [307…
```
list3
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_25576\1251968012.py in <module>
----> 1 list3

NameError: name 'list3' is not defined
```

list membership

In [310…
```
list1
```

Out[310…
```
['one', 'two', 'three', 'four', 'five', 'seven', 'six', 'eight']
```

In [312…
```
'two' in list1
```

Out[312…
```
True
```

In [314…
```
'nine' in list1
```

Out[314…
```
False
```

In [320…
```
if 'four' in list1:
    print("three is available in list")
else:
    print("three is not available in list")
```

```
three is available in list
```

In [324…
```
if '=' in list1:
    print("available")
else:
    print("not available")
```

```
not available
```

In [326…
```
if 9 in list1:
    print('yes')
else:
    print('no')
```

```
no
```

loop through list

In [351…
```
list1
```

Out[351…
```
['one', 'two', 'three', 'four', 'five', 'seven', 'six', 'eight']
```

In [353…
```
for i in list1:
    print(i)
```

```
one
two
three
four
five
seven
six
eight
```

In [355…
```python
for i in list2:
    print(i)
```

```
five
seven
six
eight
```

In [357…
```python
for i in enumerate(list1):
    print(i)
```

```
(0, 'one')
(1, 'two')
(2, 'three')
(3, 'four')
(4, 'five')
(5, 'seven')
(6, 'six')
(7, 'eight')
```

In [367…
```python
for i in enumerate(list2):
    print(i)
```

```
(0, 'five')
(1, 'seven')
(2, 'six')
(3, 'eight')
```

In [ ]:
```python
```

In [ ]:
```python
```