Python - Basics [CSD1S1]

May 27, 2019

This is an introduction to basics of python. Examples of data types and operators are given. The code may be tried in the IDLE

In [1]:
```
#Basic Data types
#integers
print(27)#base 10
print(0b10)#base 2
print(0o10)#base 8
print(0x10)#base 16

#float
print(0.3)
print(1.79e308) # 1.8 x 10^308 is maximum
print(5e-324) # 5.0 x 10^-324 is minimum

#complex number
print(2+3j)

#character
print('c')

#string
print("I am a string.")

#multi lined string
print("""I am a
string spans
across several lines""")

# Check the object types [ use type() method]
x = "I am a string."
print(type(x))

z= 2+4j
print(type(z))
```

```
27
2
```

```
8
16
0.3
1.79e+308
5e-324
(2+3j)
c
I am a string.
I am a
string spans
across several lines
<class 'str'>
<class 'complex'>
```

```
In [2]: # Arithmetic operators
        a = 2
        b = 3
        print(a+b)
        print(a*b)
        print(a/b)
        print(a%b) #Modulus
        print(a**b) #Exponent
        print(a//b) #Floor division
```

```
5
6
0.6666666666666666
2
8
0
```

```
In [3]: x = 7
        y = 5
        print(('x > y  is',x>y))
```

```
('x > y  is', True)
```

```
In [4]: #Assignment operators
        num1 = 4
        num1 += num1
        print(("Result of += is ", num1))
        num1 *= num1
        print(("Result of *= is ", num1))
        num1 **= num1
        print(("Result of **= is ", num1))
```

```
('Result of += is ', 8)
('Result of *= is ', 64)
('Result of **= is ', 39402006196394479212279040100143613805079739270465446667948293404245721771
```

```
In [5]: #Logical operators
        a = True
        b = False
        print(('a and b is',a and b)) #False
        print(('a or b is',a or b)) # True
        print(('not a is',not a)) #False
```

```
('a and b is', False)
('a or b is', True)
('not a is', False)
```

```
In [6]: #Bitwise operators
        x = 10
        y = 4
        print(x&y)
        print(bin(x&y))
        print(x|y)
        print(bin(x|y))
        print(bin(~x))
        print(x>>1)
        print(x>>2)
        print(x<<1)
        print(x<<2)
```

```
0
0b0
14
0b1110
-0b1011
5
2
20
40
```

```
In [7]: #Relational operators
        print((2 > 3) or (2 < 1)) #False
        print((4 > 3) and (2 > 1)) # True
```

```
False
True
```

In [8]:
```
x = 2
y = 4

print('x > y  is',x>y)#False
print('x < y  is',x<y)#True
print('x == y is',x==y)#False
print('x != y is',x!=y)#True
print('x >= y is',x>=y)#False
print('x <= y is',x<=y)#True
```

```
x > y  is False
x < y  is True
x == y is False
x != y is True
x >= y is False
x <= y is True
```

In [9]:
```
#Special operators
#Identity operators [ is and is not]
#is True if the operands are identical
x = 5
y = 5
print( x is y)
print(x is not y)
```

```
True
False
```

In [10]:
```
#Special operators
#Membership operator [in and not in]
#in is True if value/variable is found in the sequence
name = 'Santhosh Kumar G'
print('h' in name)
print('g' not in name)
```

```
True
True
```

In [11]:
```
# Precedence operator used in Python are (unary + - ~, **, * / %, + - , &) etc.
a = 4
b = 5
x = 8
y = 2
z = (a+b) * x / y
print("Value of (a+b) * x/ y is ",  z)
z = (a-b) ** x + y
print("Value of (a-b) ** x+y is ",  z)
```

```
Value of (a+b) * x/ y is  36.0
Value of (a-b) ** x+y is  3
```

CONDITIONALS AND ITERATIVE STATEMENTS

```
In [12]: #Decision Making
         # if statement
         colors = ['red', 'blue', 'green', 'yellow'] #defines a list of colors indexed at 0
         if 'red' in colors:
             print('YES')
         else:
             print('NO')
```

```
YES
```

```
In [13]: #if .. else statement
         num = -100
         if num >= 0:
             print("Positive or Zero")
         else:
             print("Negative number")
```

```
Negative number
```

```
In [14]: x = int(input("Please enter an integer number: "))
         if x%2 == 0:
             print ("x is even")
         else:
             print("x is odd")
```

```
Please enter an integer number: 4
x is even
```

```
In [15]: #if ..elif ..else statement ( equivalent to switch statement)
         print("Menu Driven Program")
         num = input("Please enter your choice (1/2/3/4): ")
         if (num.isdigit()):
             if int(num) == 1:
                 print("Choice 1:")
             elif int(num) == 2:
                 print("Choice 2:")
             elif int(num) == 3:
                 print("Choice 3:")
             elif int(num) == 4:
                 print("Choice 4:")
```

```
            else:
                print("Wrong Choice")
        else:
            print("Please enter integer:")
```

```
Menu Driven Program
Please enter your choice (1/2/3/4): 3
Choice 3:
```

In [16]:
```
#for loop
for x in range(6):
    print(x)
for x in range(2, 6):
    print(x)
```

```
0
1
2
3
4
5
2
3
4
5
```

In [17]:
```
#To compute and display the sum of any 5 natural numbers
sum = 0
for x in range(1, 6):
    number = int(input('Enter a number : ' ))
    sum = sum + number
print(sum)
```

```
Enter a number : 3
Enter a number : 4
Enter a number : 5
Enter a number : 6
Enter a number : 6
24
```

In [18]:
```
#Method 1 - Using  reversed() on a range.
for i in reversed(range(0, 3)):
    print(i)    # Display the index.
```

```
2
1
0
```

```
In [19]: #While loop
         #Print i as long as i is less than 6:
         i = 1
         while i < 6:
             print(i)
             i += 1
```

```
1
2
3
4
5
```

```
In [20]: #break statement
         for number in range(10):
             if number == 5:
                 break                              # break here
             print("Number is ",  number)
         print('Out of loop')
```

```
Number is  0
Number is  1
Number is  2
Number is  3
Number is  4
Out of loop
```

```
In [21]: #continue statement
         for number in range(5):
             if number == 3:
                 continue                # continue here
             print("Number is ",  number)
         print('Out of loop')
```

```
Number is  0
Number is  1
Number is  2
Number is  4
Out of loop
```

```
In [22]: #pass statement
         for number in range(5):
             if number == 3:
                 pass    # continue here
             print("Number is ",  number)
         print('Out of loop')
```

```
Number is  0
Number is  1
Number is  2
Number is  3
Number is  4
Out of loop
```