Online Workshop on ‘How to develop Pythonic coding rather than Python coding – Logic Perspective’

21.7.20 Day 1 session 2

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Iteration & String

Objectives of the Day 1 session 2

To acquire knowledge of iteration and string in Python

To comprehend the concept of looping statements in Python

To practice the simple problems in iteration and string

Iteration
for loop

```
for  var in <collection>:
<statements>
```

where collection is iterable obj like list, tuple,dictionary,string and range

```
a = [’i’, ’say’, ’hello’] # a list of string elements
for i in range(len(a)):
   print (i,end=’ ’)
   print (a[i])
```

Output

```
 0 I
 1 say
 2 hello
```

Iteration
while loop

while condition :
<Statements>

```
i=0
while (i < 10):
   print( i)
   i += 1
o/p
0
1
2
.
9
```

Another Example for loop

```
 for someChar in “Hello” :
     print(someChar)
```

```
Output
H
e
l
l
o
```

```
d=[(1,'a'),(2,'b'),(3,'c'),(4,'d'),(5,'e')]
for (x, y) in  d :
   print (x,y)
```

o/p

```
1 a
2 b
3 c
4 d
5 e
```

for loop using range()

```
for x in range(5):
     print x
```

o/p

```
0
1
2
3
4
```

Python program but not Pythonic

```
def traverse(string):
    index = 0
    while index < len(string):
        letter = string[index]
        print(letter)
        index += 1

traverse('Monty Python')
```

Output ?

Pythonic program

```
def traverse(string):
    for letter in string:
        print (letter)

traverse('Monty Python’)
```

in operator

in is a boolean operator that checks membership within a sequence

It is also called membership operator.

```
'a' in 'banana'
True
'o' in 'banana'
False
```

String Operations

String handling functions

```
s=’HELLO’
s.lower()  # hello
s1=’hello’
s1.upper() # HELLO
s.strip() -- returns a string with whitespace
removed from the start and end
s=’     I am happy       ‘
s.strip() # I am happy ( no front and back spaces)
s.isalpha()# True
s.isdigit()  # False
s.isspace() #False
```

split() and join() functions

s.split('delim') - returns a string into a list of words separated by delim

Ex:

```
'aaa,bbb,ccc'.split(',')  -> ['aaa', 'bbb', 'ccc'].
```

Defalut delim is space

s.join(list) -- opposite of split(), joins the elements in the given list together using the string as the delimiter.

Ex:

```
'---'.join(['aaa', 'bbb', 'ccc']) -> ‘aaa---bbb---ccc’
```

String Formatting Operator: %

The operator % allows strings to be built out of many data items in a “fill in the blanks” fashion.

```
 x = “Ram”
 y = 34
print(“%s’s age is  %d” % (x, y))
o/p
Ram’s age is  34
```

The tuple following the % operator is used to fill in the blanks in the original string marked with %s %g %d to represent string, float and integer values

Converting anything to a String

The built-in str() function can convert an instance of <u>any</u> data type into a string

Ex:

```
print(“Hello ” + str(2))
```

o/p

```
Hello 2
```

Slicing strings

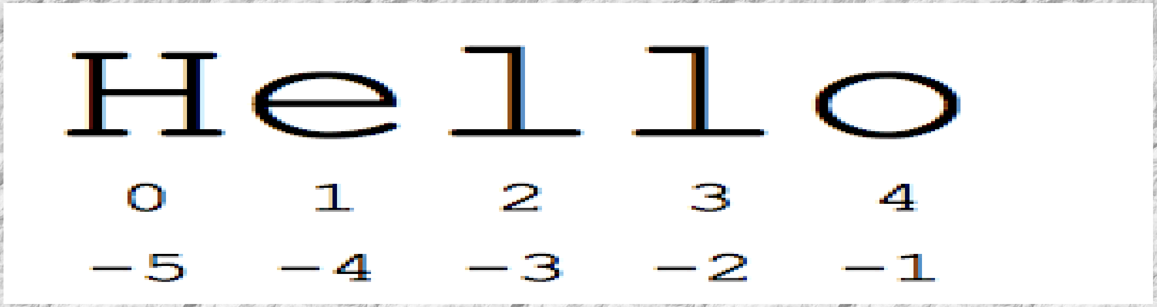
A segment of a string is called a slice. Selecting a slice is similar to selecting a character:

Ex:

```
s = 'Monty Python'
print(s[0:5])
Monty

print(s[6:12])
 Python
```

String Indexing

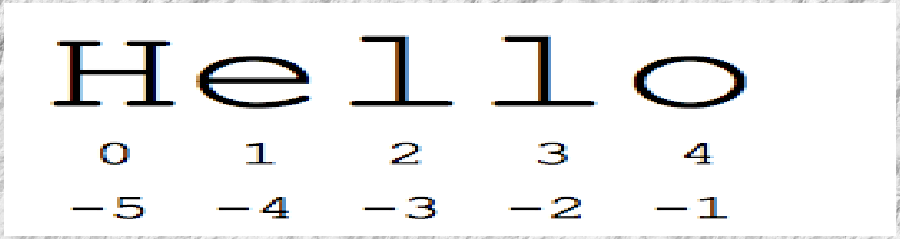


print(s[:3])
o/p
Hel

print(s[3:])
o/p
lo

String Indexing

print(s[-1])
o/p
'o' #last char (1st from the end)
print(s[-4])
o/p
'e' # 4th from the end
print(s[:-3])



o/p

'He' – from starting, going up to but not including the last 3 chars.

s[-3:] is 'llo' -- starting with the 3rd char from the end and extending to the end of the string.

s[1:4] is 'ell' -- chars starting at index 1 and extending up to but not including index 4

s[1:] is 'ello' -- omitting either index defaults to the start or end of the string

s[:] is 'Hello' -- omitting both always gives us a copy of the whole thing

s[1:100] is 'ello' -- an index that is too big is truncated down to the string length

Concluding Tips

for loop in Python is entirely different from other programming languages[for var in collection]

while loop in Python is similar to the programming constructs in other languages

There is no do… while loop existing in Python

To be Pythonic, we should use data structures and PEP 8 rules in Python

In slicing of string, st[i:n], we have to consider from i th index to n-1 .

st[:n] from 0 th index to n-1.

st[i:] from i th index to end of the string