

Python Programming

String Data Structure

Mostafa S. Ibrahim

Teaching, Training and Coaching since more than a decade!

Artificial Intelligence & Computer Vision Researcher

PhD from Simon Fraser University - Canada

Bachelor / Msc from Cairo University - Egypt

Ex-(Software Engineer / ICPC World Finalist)



Recall

```
2
3 s1 = 'most'
4 s2 = 'saad'
5 s3 = s1 + 2 * s2 ... # mostsaadsaad
6
7 lst = list(s1) ... # ['m', 'o', 's', 't']
8
9 # iterate on position, char string
10 for idx, char in enumerate(s1):
11     pass
12
13 print('most' < 'Most') ... # False
14
15 a, b, c, d = 'Most'
16 print(c) ... # s
17
18 # same with list btw
19 a, b = [3, 4]
```

With functions

```
2
3 s1 = 'moST'
4
5 print(len(s1), min(s1), max(s1)) ... # 4 S o
6
7 print(sorted(s1)) ... # ['S', 'T', 'm', 'o']
8
9 print(tuple(reversed(s1))) ... # ('T', 'S', 'o', 'm')
10
11
```

Indexing and Slicing

- Same as tuples. String is immutable!

```
4 s1 = 'moST'
5
6 print(s1[0], s1[-1]) # m T
7
8 print(s1[2:]) # ST
9 print(s1[:]) # moST
10 print(s1[::-1]) # TSom
11
12 #TypeError: 'str' object does not support item assignment
13 #s1[0] = 'c'
14
15 #TypeError: 'str' object doesn't support item deletion
16 #del s1[0]
17
18
```

List comprehension

```
2
3 lst = ["Hello", "World", "Python", "is", "Cool"]
4 first_letters = [word[0] for word in lst]
5 print(first_letters) ... # ['H', 'W', 'P', 'i', 'C']
6
7
8 first_letters = [word[0].lower() for word in lst]
9 print(first_letters) ... # ['h', 'w', 'p', 'i', 'c']
10
11
12 my_str = "Please 10 finds 123all dig0ts"
13
14 digits = [int(char) for char in my_str if char.isdigit()]
15 print(digits) ... # [1, 0, 1, 2, 3, 0]
```

Immutability

```
2
3 my_str = 'mostafa'
4
5 # TypeError: 'str' object does not support item assignment
6 # my_str[3] = 'T' #immutable!
7
8 my_str = my_str[:3] + my_str[3].upper() + my_str[4:]
9 print(my_str) # mosTafa
10
11 my_str2 = my_str
12 print(my_str is my_str2) # True
13
14 print(id(my_str)) # 0x111
15 my_str += 'saad'
16
17 print(id(my_str)) # 0x222
18 print(id(my_str2)) # 0x111
19
20 print(my_str is my_str2) # False
21
22
```

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”