Python Programming

Mutability

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Teaching, Training and Coaching since more than a decade!

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List is mutable

- All what we learned applies

```
3   def f1(lst):
4       # we can change + caller is changed
5       lst[0] = 10
6
7   def f2(lst):
8       lst = [7, 8, 9]      # local variable
9       return lst
10
11
12  my_lst = [1, 2, 3, 4, 5]
13
14  another_lst = my_lst
15  print(another_lst is my_lst)    # True
16
17  f1(another_lst)
18  print(my_lst[0])    # 10 Change
19
20  f2(my_lst)
21  print(my_lst[1])    # 2  NO change
22
23  my_lst = f2(my_lst)       # replace
24  print(my_lst[1])          # 8 - new list
25  print(another_lst[1])     # 2 - no effect
26
```

Copy and is

```python

# list(iterable) = constructor
lst = list('mostafa')
print(len(lst))     # 7
print(lst)  # ['m', 'o', 's', 't', 'a', 'f', 'a']

new_lst = lst.copy()

print(lst is new_lst)   # False
# independent changes

print(new_lst is new_lst + [1])     # False
```

Comparison

```
# same rules as string comparison
    # Item by item comparison
        # if an item is smaller, its list is smaller
        # if one list ended, it is the sammer
lst1 = [1, 5, 8]
lst2 = [1, 5, 8]
lst3 = [1, 5]
lst4 = [7, 5]
print(lst1 is lst2)     # False (must)
print(lst1 == lst2)     # True

print([1, 2, 3] is [1, 2] + [3])    # False (must)
print([1, 2, 3] == [1, 2] + [3])    # True


print(lst1 < lst2)      # False
print(lst1 <= lst2)     # True
print(lst1 <= lst3)     # False
print(lst1 <= lst4)     # True

# TypeError: '<' not supported between instances of 'int' and 'str'
#print([1, 2] < ['mostafa'])
```

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."