

```
In [5]: i = 5  
i  
type(i)
```

```
Out[5]: int
```

```
In [7]: l = []  
type(l)
```

```
Out[7]: list
```

```
In [9]: len(l)
```

```
Out[9]: 0
```

```
In [11]: l.append(10)  
l.remove(10)
```

```
In [13]: l.append(10)  
l
```

```
Out[13]: [10]
```

```
In [15]: l.remove(10)  
l
```

```
Out[15]: []
```

```
In [17]: l.append(10)  
l.append(20)  
l.append(30)  
l.append(40)  
l.append(50)
```

```
In [19]: l
```

```
Out[19]: [10, 20, 30, 40, 50]
```

```
In [21]: l1 = []  
l1
```

```
Out[21]: []
```

```
In [23]: l1.append(70)  
l1.append(2.3)  
l1.append(1 + 4j)  
l1.append(True)  
l1.append([10, 20, 30, 40])
```

```
In [25]: l1
```

```
Out[25]: [70, 2.3, (1+4j), True, [10, 20, 30, 40]]
```

```
In [27]: print(l)  
print(l1)
```

```
[10, 20, 30, 40, 50]  
[70, 2.3, (1+4j), True, [10, 20, 30, 40]]
```

```
In [31]: print(id(l))  
         print(id(l1))
```

```
2260524925760  
2260525002432
```

```
In [33]: len(l)
```

```
Out[33]: 5
```

```
In [35]: len(l1)
```

```
Out[35]: 5
```

```
In [37]: l = []
```

```
In [39]: l
```

```
Out[39]: []
```

```
In [43]: l2 = l1.copy()
```

```
In [45]: l2
```

```
Out[45]: [70, 2.3, (1+4j), True, [10, 20, 30, 40]]
```

```
In [47]: l1 == l2
```

```
Out[47]: True
```

```
In [49]: l2 != l1
```

```
Out[49]: False
```

```
In [51]: l == l2
```

```
Out[51]: False
```

```
In [55]: a = 4
```

```
In [57]: b = 4
```

```
In [61]: print(id(a)) == print(id(b))
```

```
140728796850712  
140728796850712
```

```
Out[61]: True
```

```
In [63]: print(id(l1)) == print(id(l2))
```

```
2260525002432  
2260556282688
```

```
Out[63]: True
```

```
In [65]: l.remove()
```

```
-----  
TypeError                                Traceback (most recent call last)  
Cell In[65], line 1  
----> 1 l.remove()  
  
TypeError: list.remove() takes exactly one argument (0 given)
```

```
In [67]: l.remove(10)
```

```
-----  
ValueError                                Traceback (most recent call last)  
Cell In[67], line 1  
----> 1 l.remove(10)  
  
ValueError: list.remove(x): x not in list
```

```
In [69]: l.remove(20)
```

```
-----  
ValueError                                Traceback (most recent call last)  
Cell In[69], line 1  
----> 1 l.remove(20)  
  
ValueError: list.remove(x): x not in list
```

```
In [71]: s7 = 'Make hay while the sun shines'
```

```
In [73]: s7[3]
```

```
Out[73]: 'e'
```

```
In [75]: s7[50]
```

```
-----  
IndexError                                Traceback (most recent call last)  
Cell In[75], line 1  
----> 1 s7[50]  
  
IndexError: string index out of range
```

```
In [77]: s7[-9]
```

```
Out[77]: 'u'
```

```
In [81]: for i in s7:  
         print(i)
```

M  
a  
k  
e

h  
a  
y

w  
h  
i  
l  
e

t  
h  
e

s  
u  
n

s  
h  
i  
n  
e  
s

```
In [85]: s9 = 'nareshit'
```

```
In [87]: s9[0:8]
```

```
Out[87]: 'nareshit'
```

```
In [89]: s9[0:4]
```

```
Out[89]: 'nare'
```

```
In [91]: s9[0: -3]
```

```
Out[91]: 'nares'
```

```
In [95]: step_indexing = [1,2,3,4,5,6,7,8,9,10]
```

```
In [99]: step_indexing[0:9:4]
```

```
Out[99]: [1, 5, 9]
```

```
In [101... step_indexing[:]
```

```
Out[101... [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
In [103... s7.reverse()
```

```
-----  
AttributeError                                Traceback (most recent call last)  
Cell In[103], line 1  
----> 1 s7.reverse()  
  
AttributeError: 'str' object has no attribute 'reverse'
```

```
In [105...  l1.reverse()
```

```
In [107...  l1
```

```
Out[107...  [[10, 20, 30, 40], True, (1+4j), 2.3, 70]
```

```
In [109...  t = 5  
            r = 2  
            print(t // r)
```

```
2
```

```
In [111...  bin(25)
```

```
Out[111...  '0b11001'
```

```
In [113...  bin(35)
```

```
Out[113...  '0b100011'
```

```
In [115...  oct(25)
```

```
Out[115...  '0o31'
```

```
In [117...  int(0o31)
```

```
Out[117...  25
```

```
In [119...  bin(7)
```

```
Out[119...  '0b111'
```

```
In [121...  hex(9)
```

```
Out[121...  '0x9'
```

```
In [123...  hex(10)
```

```
Out[123...  '0xa'
```

```
In [125...  hex(11)
```

```
Out[125...  '0xb'
```

```
In [127...  hex(256)
```

```
Out[127...  '0x100'
```

```
In [129...  0o31
```

Out[129... 25

In [131... 0x19

Out[131... 25

In [133... 0x15

Out[133... 21

In [137... *#Q)how to swap 2 variables in python: a,b=5,6 after swap a=6 b=5*

In [144...  
a1 = 5  
b1 = 6  
temp = a1  
a1 = b1  
b1 = temp  
print(a1)  
print(b1)

6  
5

In [147...  
a3 = 5  
b3 = 6  
a3 = a3 + b3  
b3 = a3 - b3  
a3 = a3 - b3  
print(a3)  
print(b3)

6  
5

In [149... bin(5)

Out[149... '0b101'

In [151... bin(6)

Out[151... '0b110'

In [155...  
print(0b101)  
print(0b110)

5  
6

In [159...  
print(0b110)  
print(0b101)

6  
5

In [161...  
d,e = 5,6  
e,d = d,e  
print(e)  
print(d)

5  
6

In [163... 11

Out[163... [[10, 20, 30, 40], True, (1+4j), 2.3, 70]

In [165... 12

Out[165... [70, 2.3, (1+4j), True, [10, 20, 30, 40]]

In [167... 12.count(True)

Out[167... 1

In [169... 12.count(70)

Out[169... 1

In [171... 12.append(70)

In [173... 12[:]

Out[173... [70, 2.3, (1+4j), True, [10, 20, 30, 40], 70]

In [175... 12[:5]

Out[175... [70, 2.3, (1+4j), True, [10, 20, 30, 40]]

In [177... 12[5:]

Out[177... [70]

In [179... 1

Out[179... []

In [181... 1.append(40)

In [183... 1

Out[183... [40]

In [185... 1.append(50)

In [187... 1

Out[187... [40, 50]

In [189... 1[1:]

Out[189... [50]

In [191... 1[2:]

Out[191... []

```
In [193... l.append(20)
1
```

Out[193... [40, 50, 20]

```
In [195... l[:-1]
```

Out[195... [40, 50]

```
In [197... l[::-1]
```

Out[197... [20, 50, 40]

```
In [199... 17 = [40,30,20,10,40,30,20]
17
```

Out[199... [40, 30, 20, 10, 40, 30, 20]

```
In [201... 17[::-1]
```

Out[201... [20, 30, 40, 10, 20, 30, 40]

```
In [203... 17[::-2]
```

Out[203... [20, 40, 20, 40]

```
In [209... 17.index(20)
```

Out[209... 2

```
In [211... id(12)
```

Out[211... 2260556282688

```
In [213... del(12)
```

```
In [215... 12
```

```
-----
NameError                                Traceback (most recent call last)
Cell In[215], line 1
----> 1 12

NameError: name '12' is not defined
```

```
In [217... 11.pop()
```

Out[217... 70

```
In [219... 1100 = [22, 54, 65, 22, 12, 22]
1100.pop()
```

Out[219... 22



```
In [221... 12 = l.copy()
```

```
In [223... 12
```

```
Out[223... [40, 50, 20]
```

```
In [225... 12.remove(50)
```

```
In [227... 12
```

```
Out[227... [40, 20]
```

```
In [229... 12.pop(-1)
```

```
Out[229... 20
```

```
In [231... 12.append(10)
```

```
In [233... 12.append(40)
```

```
In [235... 12
```

```
Out[235... [40, 10, 40]
```

```
In [237... 12.insert(2, 25)
```

```
In [239... 12
```

```
Out[239... [40, 10, 25, 40]
```

```
In [241... 1
```

```
Out[241... [40, 50, 20]
```

```
In [243... l[0]
```

```
Out[243... 40
```

```
In [245... l[0] = 400
```

```
In [247... 1
```

```
Out[247... [400, 50, 20]
```

```
In [249... l.pop()
```

```
Out[249... 20
```

```
In [251... l.append(20)
```

```
In [253... 1
```

```
Out[253... [400, 50, 20]
```

In [255... 11

Out[255... [[10, 20, 30, 40], True, (1+4j), 2.3]

In [257... len(l1)

Out[257... 4

In [259... 12

Out[259... [40, 10, 25, 40]

In [261... len(l2)

Out[261... 4

In [263... l1

Out[263... [[10, 20, 30, 40], True, (1+4j), 2.3]

In [265... `for i in l1:`  
 `print(i)`

[10, 20, 30, 40]  
True  
(1+4j)  
2.3

In [267... `for i in enumerate(l1):`  
 `print(i)`

(0, [10, 20, 30, 40])  
(1, True)  
(2, (1+4j))  
(3, 2.3)

In [269... 1

Out[269... [400, 50, 20]

In [271... `l.sort()`*#parameter tuning*

In [273... 1

Out[273... [20, 50, 400]

In [275... `l.sort(reverse = True)`*#hyperparameter tuning*

In [277... 1

Out[277... [400, 50, 20]

In [279... `l5 = ['m', 'a', 'g']`  
`l5.sort()`

In [281... 15

Out[281... ['a', 'g', 'm']

In [283... l1

Out[283... [[10, 20, 30, 40], True, (1+4j), 2.3]

In [291... l1.append(70)

In [293... l1.sort()

```
-----  
TypeError                                Traceback (most recent call last)  
Cell In[293], line 1  
----> 1 l1.sort()  
  
TypeError: '<' not supported between instances of 'bool' and 'list'
```

In [295... l1

Out[295... [[10, 20, 30, 40], True, (1+4j), 2.3, 70]

In [297... l1.sort()

```
-----  
TypeError                                Traceback (most recent call last)  
Cell In[297], line 1  
----> 1 l1.sort()  
  
TypeError: '<' not supported between instances of 'bool' and 'list'
```

In [299... int.\_\_add\_\_(3,2)

Out[299... 5

In [301... int.\_\_sub\_\_(2,3)

Out[301... -1

In [303... int.\_\_mul\_\_(2,3)

Out[303... 6

In [305... float.\_\_sub\_\_(2.3, 3.3)

Out[305... -1.0

In [ ]: