

Python Data Structure

- List
- Tuple
- Set
- Dict
- Range

list []

```
In [1]: 1 l=[]  
        2 l
```

```
Out[1]: []
```

```
In [2]: 1 type(l)
```

```
Out[2]: list
```

```
In [3]: 1 len(l)
```

```
Out[3]: 0
```

In [4]: 1 l.append()

```
-----  
TypeError                                Traceback (most recent call last)  
Cell In[4], line 1  
----> 1 l.append()  
  
TypeError: list.append() takes exactly one argument (0 given)
```

In [5]: 1 l.append(10)

In [6]: 1 l

Out[6]: [10]

In [9]: 1 l.append(20,30)

```
-----  
TypeError                                Traceback (most recent call last)  
Cell In[9], line 1  
----> 1 l.append(20,30)  
  
TypeError: list.append() takes exactly one argument (2 given)
```

In [10]: 1 l.append(20)
2 l.append(30)
3 l.append(40)
4 l

Out[10]: [10, 20, 20, 30, 40]

In [11]: 1 l.remove(20)

In [12]: 1 l

Out[12]: [10, 20, 30, 40]

```
In [13]: 1 len(1)
```

```
Out[13]: 4
```

```
In [14]: 1 l.append(50)
```

```
In [15]: 1 l
```

```
Out[15]: [10, 20, 30, 40, 50]
```

```
In [17]: 1 len(l)
```

```
Out[17]: 5
```

```
In [19]: 1 l1 = [10,2.4,'karthik',True,1+2j]
          2 l1
```

```
Out[19]: [10, 2.4, 'karthik', True, (1+2j)]
```

```
In [20]: 1 print(l)
          2 print(l1)
```

```
[10, 20, 30, 40, 50]
```

```
[10, 2.4, 'karthik', True, (1+2j)]
```

```
In [21]: 1 print(len(l))
          2 print(len(l1))
```

```
5
```

```
5
```

```
In [22]: 1 print(id(l))
          2 print(id(l1))
```

```
2479695932672
```

```
2479703161472
```

In [23]: 1 12

```
-----  
NameError                                Traceback (most recent call last)  
Cell In[23], line 1  
----> 1 12
```

NameError: name '12' is not defined

In [24]: 1 12 = 11.copy()
2 12

Out[24]: [10, 2.4, 'karthik', True, (1+2j)]

In [25]: 1 11==12

Out[25]: True

In [26]: 1 12==1

Out[26]: False

In [27]: 1 print(1)
2 print(11)
3 print(12)

```
[10, 20, 30, 40, 50]  
[10, 2.4, 'karthik', True, (1+2j)]  
[10, 2.4, 'karthik', True, (1+2j)]
```

In [28]: 1 1[:]

Out[28]: [10, 20, 30, 40, 50]

In [29]: 1 1[0]

Out[29]: 10

```
In [30]: 1 l[-1]
```

```
Out[30]: 50
```

```
In [31]: 1 l[10]
```

```
-----  
IndexError                                Traceback (most recent call last)  
Cell In[31], line 1  
----> 1 l[10]  
  
IndexError: list index out of range
```

```
In [32]: 1 l[4]
```

```
Out[32]: 50
```

```
In [34]: 1 l[0]
```

```
Out[34]: 10
```

```
In [35]: 1 l[0]=100  
        2 l
```

```
Out[35]: [100, 20, 30, 40, 50]
```

```
In [38]: 1 l[-1] = 'January'  
        2 l
```

```
Out[38]: [100, 20, 30, 40, 'January']
```

```
In [39]: 1 l.append('February')  
        2 l
```

```
Out[39]: [100, 20, 30, 40, 'January', 'February']
```

```
In [40]: 1 12
```

```
Out[40]: [10, 2.4, 'karthik', True, (1+2j)]
```

```
In [41]: 1 l2.clear()
```

```
In [42]: 1 l2
```

```
Out[42]: []
```

```
In [43]: 1 print(id(l2))
```

```
2479702831616
```

```
In [44]: 1 del l2
```

```
In [45]: 1 print(id(l2))
```

```
-----  
NameError                                Traceback (most recent call last)  
Cell In[45], line 1  
----> 1 print(id(l2))  
  
NameError: name 'l2' is not defined
```

```
In [46]: 1 l
```

```
Out[46]: [100, 20, 30, 40, 'January', 'February']
```

```
In [47]: 1 l.count(100)
```

```
Out[47]: 1
```

```
In [48]: 1 l.append(40)
```

```
In [49]: 1 1
```

```
Out[49]: [100, 20, 30, 40, 'January', 'February', 40]
```

```
In [50]: 1 1.count(40)
```

```
Out[50]: 2
```

```
In [51]: 1 1.count(1000)
```

```
Out[51]: 0
```

```
In [52]: 1 print(1)
          2 print(l1)
```

```
[100, 20, 30, 40, 'January', 'February', 40]
[10, 2.4, 'karthik', True, (1+2j)]
```

```
In [53]: 1 print(len(1))
          2 print(len(l1))
```

```
7
5
```

List Membership

```
In [54]: 1 100 in l
```

```
Out[54]: True
```

```
In [55]: 1 1000 in l
```

```
Out[55]: False
```

```
In [56]: 1 1
```

```
Out[56]: [100, 20, 30, 40, 'January', 'February', 40]
```

```
In [57]: 1 11
```

```
Out[57]: [10, 2.4, 'karthik', True, (1+2j)]
```

```
In [59]: 1 12 = []
```

```
In [60]: 1 12
```

```
Out[60]: []
```

```
In [61]: 1 12.extend(1)
```

```
In [64]: 1 12
```

```
Out[64]: [100, 20, 30, 40, 'January', 'February', 40]
```

```
In [65]: 1 11.extend(12)
```

```
In [66]: 1 11
```

```
Out[66]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]
```

```
In [67]: 1 len(11)
```

```
Out[67]: 12
```

```
In [69]: 1 1.index('January')
```

```
Out[69]: 4
```

Index & Slicing

Forward Indexing

In [71]: 1 11

Out[71]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]

In [72]: 1 11[:]

Out[72]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]

In [73]: 1 11[2:4]

Out[73]: ['karthik', True]

In [74]: 1 12

Out[74]: [100, 20, 30, 40, 'January', 'February', 40]

In [75]: 1 1

Out[75]: [100, 20, 30, 40, 'January', 'February', 40]

In [76]: 1 11

Out[76]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]

In [77]: 1 11[:]

Out[77]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]

In [78]: 1 11[3:10]

Out[78]: [True, (1+2j), 100, 20, 30, 40, 'January']

```
In [79]: 1  l1[3:10:2]
```

```
Out[79]: [True, 100, 30, 'January']
```

```
In [80]: 1  l1[::2]
```

```
Out[80]: [10, 'karthik', (1+2j), 20, 40, 'February']
```

```
In [82]: 1  l1[::5]
```

```
Out[82]: [10, 100, 'February']
```

Backward Indexing

```
In [86]: 1  l1[:]
```

```
Out[86]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]
```

```
In [87]: 1  l1[-5]
```

```
Out[87]: 30
```

```
In [88]: 1  l1[:-9]
```

```
Out[88]: [10, 2.4, 'karthik']
```

```
In [89]: 1  l1[:-3]
```

```
Out[89]: [10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40]
```

```
In [90]: 1  l1[-3:]
```

```
Out[90]: ['January', 'February', 40]
```

```
In [91]: 1 l1[3:-3]
```

```
Out[91]: [True, (1+2j), 100, 20, 30, 40]
```

```
In [92]: 1 l1[::-1]
```

```
Out[92]: [40, 'February', 'January', 40, 30, 20, 100, (1+2j), True, 'karthik', 2.4, 10]
```

```
In [94]: 1 l1[::-3]
```

```
Out[94]: [40, 40, 100, 'karthik']
```

```
In [95]: 1 print(l)
2 print(l1)
3 print(l2)
```

```
[100, 20, 30, 40, 'January', 'February', 40]
```

```
[10, 2.4, 'karthik', True, (1+2j), 100, 20, 30, 40, 'January', 'February', 40]
```

```
[100, 20, 30, 40, 'January', 'February', 40]
```

```
In [96]: 1 l1.remove(1+2j)
2 l1
```

```
Out[96]: [10, 2.4, 'karthik', True, 100, 20, 30, 40, 'January', 'February', 40]
```

```
In [ ]: 1
```