22-10-2025

List_Data Structure

.List .Tuple .Set .Dict .Range

LIST

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

Out[1]: []

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

Out[2]: list

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

Out[3]: 0

```
In [4]: 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]: l.append(10)
```

```
In [6]: l
```

Out[6]: [10]

```
In [7]: l.append(20)
        l.append(30)
        l.append(40)
```

```
In [8]: l
```

Out[8]: [10, 20, 30, 40]

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

Out[9]: 4

```
In [10]: l.append(50)
```

```
In [11]: l
```

```
Out[11]: [10, 20, 30, 40, 50]
```

```
In [12]: l1 = [10,3.4, 'ten', True, 1+2j]
         l1
```

```
Out[12]: [10, 3.4, 'ten', True, (1+2j)]
```

```
In [13]: print(l)
         print(l1)
```

```
[10, 20, 30, 40, 50]
[10, 3.4, 'ten', True, (1+2j)]
```

```
In [14]: print(len(l))
         print(len(l1))
```

```
5
5
```

```
In [15]: print(id(1))
         print(id(l1))
```

```
140705988653992
1829069470720
```

```
In [16]: l2
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[16], line 1
----> 1 l2

NameError: name 'l2' is not defined
```

```
In [17]: l2 = l1.copy()
         l2
```

```
Out[17]: [10, 3.4, 'ten', True, (1+2j)]
```

```
In [18]: l1 == l2
```

```
Out[18]: True
```

```
In [19]: l == l2
```

```
Out[19]: False
```

```
In [20]: print(l)
         print(l1)
         print(l2)
```

```
[10, 20, 30, 40, 50]
[10, 3.4, 'ten', True, (1+2j)]
[10, 3.4, 'ten', True, (1+2j)]
```

In [21]: `l != l2`

Out[21]: True

In [22]: `l`

Out[22]: [10, 20, 30, 40, 50]

In [23]: `l[:]`

Out[23]: [10, 20, 30, 40, 50]

In [24]: `l[0]`

Out[24]: 10

In [25]: `l[-1]`

Out[25]: 50

In [26]: `l`

Out[26]: [10, 20, 30, 40, 50]

In [27]: `l[4]`

Out[27]: 50

In [28]: `l[5]`

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
Cell In[28], line 1
----> 1 l[5]

IndexError: list index out of range
```

In [29]: `l[10]`

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
Cell In[29], line 1
----> 1 l[10]

IndexError: list index out of range
```

In [30]: `l`

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

In [31]: `l[0]`

Out[31]: 10

```
In [32]: l[0] = 100
```

```
In [33]: l
```

Out[33]: [100, 20, 30, 40, 50]

```
In [34]: l[-1] = 'jan'
```

```
In [35]: l
```

Out[35]: [100, 20, 30, 40, 'jan']

```
In [36]: l.append('feb')
```

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

Out[37]: [100, 20, 30, 40, 'jan', 'feb']

```
In [38]: l.append(40)
         l
```

Out[38]: [100, 20, 30, 40, 'jan', 'feb', 40]

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

Out[39]: [100, 20, 30, 40, 'jan', 'feb', 40]

```
In [40]: l2
```

Out[40]: [10, 3.4, 'ten', True, (1+2j)]

```
In [41]: len(l2)
```

Out[41]: 5

```
In [42]: l2.clear()
```

```
In [43]: l2
```

Out[43]: []

```
In [44]: len(l2)
```

Out[44]: 0

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

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

Out[46]: [100, 20, 30, 40, 'jan', 'feb', 40]

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

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

```
In [48]:  l.count(40)
```

```
Out[48]:  2
```

```
In [49]:  l
```

```
Out[49]:  [100, 20, 30, 40, 'jan', 'feb', 40]
```

```
In [50]:  l.count(1000)
```

```
Out[50]:  0
```

```
In [51]:  print(l)
          print(l1)
```

```
[100, 20, 30, 40, 'jan', 'feb', 40]
[10, 3.4, 'ten', True, (1+2j)]
```

```
In [52]:  print(len(l))
          print(len(l1))
```

```
7
5
```

list membership

```
In [53]:  l
```

```
Out[53]:  [100, 20, 30, 40, 'jan', 'feb', 40]
```

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

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

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

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

```
In [56]:  l
```

```
Out[56]:  [100, 20, 30, 40, 'jan', 'feb', 40]
```

```
In [57]:  l1
```

```
Out[57]:  [10, 3.4, 'ten', True, (1+2j)]
```

```
In [58]:  l2 = []
```

```
In [59]:  print(len(l))
          print(len(l1))
          print(len(l2))
```

```
        7
        5
        0
```

In [60]: `l`

Out[60]: `[100, 20, 30, 40, 'jan', 'feb', 40]`

In [61]: `l1`

Out[61]: `[10, 3.4, 'ten', True, (1+2j)]`

In [62]: `l2`

Out[62]: `[]`

In [63]: `l2.extend(l)`

In [64]: `l2`

Out[64]: `[100, 20, 30, 40, 'jan', 'feb', 40]`

In [65]: `l2.extend(l1)`

In [66]: `l2`

Out[66]: `[100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]`

In [67]: `l1`

Out[67]: `[10, 3.4, 'ten', True, (1+2j)]`

In [68]: `l1.extend(l2)`

In [69]: `l1`

Out[69]:
```
[10,
 3.4,
 'ten',
 True,
 (1+2j),
 100,
 20,
 30,
 40,
 'jan',
 'feb',
 40,
 10,
 3.4,
 'ten',
 True,
 (1+2j)]
```

```
In [70]: len(l1)
```

Out[70]: 17

```
In [71]: l
```

Out[71]: [100, 20, 30, 40, 'jan', 'feb', 40]

```
In [72]: l.index('jan')
```

Out[72]: 4

```
In [73]: l
```

Out[73]: [100, 20, 30, 40, 'jan', 'feb', 40]

```
In [74]: l[:]
```

Out[74]: [100, 20, 30, 40, 'jan', 'feb', 40]

```
In [75]: l2
```

Out[75]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

```
In [76]: l2[:]
```

Out[76]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

```
In [77]: l2[0:6]
```

Out[77]: [100, 20, 30, 40, 'jan', 'feb']

```
In [78]: l2
```

Out[78]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

```
In [79]: l2[3:10]
```

Out[79]: [40, 'jan', 'feb', 40, 10, 3.4, 'ten']

```
In [80]: l2
```

Out[80]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

```
In [81]: l2[::2]
```

Out[81]: [100, 30, 'jan', 40, 3.4, True]

```
In [82]: l2
```

Out[82]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

```
In [83]: l2[::5]
```

Out[83]: [100, 'feb', True]

backward indexing & backward slicing

In [84]: l2

Out[84]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

In [85]: l2[:]

Out[85]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

In [86]: l2[-5]

Out[86]: 10

In [87]: l2

Out[87]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

In [88]: l2[:-9]

Out[88]: [100, 20, 30]

In [89]: l2

Out[89]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

In [90]: l2[:-3]

Out[90]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4]

In [91]: l2

Out[91]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

In [92]: l2[-3:]

Out[92]: ['ten', True, (1+2j)]

In [93]: l2

Out[93]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

In [94]: l2[3:-3]

Out[94]: [40, 'jan', 'feb', 40, 10, 3.4]

In [95]: l2

Out[95]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]

```
In [96]: l2[::-1]
```

```
Out[96]: [(1+2j), True, 'ten', 3.4, 10, 40, 'feb', 'jan', 40, 30, 20, 100]
```

```
In [97]: l2
```

```
Out[97]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]
```

```
In [98]: l2[:-3]
```

```
Out[98]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4]
```

```
In [99]: l2
```

```
Out[99]: [100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]
```

```
In [100… l2[::-3]
```

```
Out[100… [(1+2j), 3.4, 'feb', 30]
```

```
In [101… print(l)
         print(l1)
         print(l2)
```

```
[100, 20, 30, 40, 'jan', 'feb', 40]
[10, 3.4, 'ten', True, (1+2j), 100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', Tr
ue, (1+2j)]
[100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2j)]
```

```
In [102… l1.remove(1+2j)
```

```
In [103… print(l1)
```

```
[10, 3.4, 'ten', True, 100, 20, 30, 40, 'jan', 'feb', 40, 10, 3.4, 'ten', True, (1+2
j)]
```

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```
In [122… l = []
         l
```

```
Out[122… []
```

```
In [123… type(l)
```

```
Out[123… list
```

```
In [124… print(type(l))
```

```
<class 'list'>
```

```
In [125… len(l)
```

```
Out[125… 0
```

```
In [126...  l.append(10)
```

```
In [127...  l
```

Out[127... [10]

```
In [128...  l.append(20)
            l.append(30)
            l.append(40)
            l.append(50)
```

```
In [129...  l
```

Out[129... [10, 20, 30, 40, 50]

```
In [130...  len(l)
```

Out[130... 5

```
In [131...  l.append(10,20)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[131], line 1
----> 1 l.append(10,20)

TypeError: list.append() takes exactly one argument (2 given)
```

```
In [132...  l
```

Out[132... [10, 20, 30, 40, 50]

```
In [133...  l.append(10)
```

```
In [134...  l
```

Out[134... [10, 20, 30, 40, 50, 10]

```
In [135...  l
```

Out[135... [10, 20, 30, 40, 50, 10]

```
In [136...  l[0]
```

Out[136... 10

```
In [137...  l[0] = 100
```

```
In [138...  l
```

Out[138... [100, 20, 30, 40, 50, 10]

In [139... `l[-1] = -50`

In [140... `l`

Out[140... `[100, 20, 30, 40, 50, -50]`

In [142... `l1 = l.copy()`

In [143... `l1`

Out[143... `[100, 20, 30, 40, 50, -50]`

In [144...
```
print(l)
print(l1)
```
```
[100, 20, 30, 40, 50, -50]
[100, 20, 30, 40, 50, -50]
```

In [145... `l == l1`

Out[145... `True`

In [146... `id(l) == id(l1)`

Out[146... `False`

In [147... `id(l) != id(l1)`

Out[147... `True`

In [148... `l`

Out[148... `[100, 20, 30, 40, 50, -50]`

In [149... `l.count(20)`

Out[149... `1`

In [150... `l.append(20)`

In [151... `l`

Out[151... `[100, 20, 30, 40, 50, -50, 20]`

In [152... `l.count(20)`

Out[152... `2`

In [153... `l1`

Out[153... `[100, 20, 30, 40, 50, -50]`

In [154... `len(l1)`

Out[154...   6

In [155...   `l1`

Out[155...   [100, 20, 30, 40, 50, -50]

In [156...   `l1.clear()`

In [157...   `l1`

Out[157...   []

In [158...   `del l1`

In [159...   `l1`

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[159], line 1
----> 1 l1

NameError: name 'l1' is not defined
```

In [160...   `l`

Out[160...   [100, 20, 30, 40, 50, -50, 20]

In [161...   `l2 = []`

In [162...
```
l2.append(9)
l2.append('nit')
l2.append(True)
l2.append(1+2j)
l2.append(9.3)
```

In [163...   `l2`

Out[163...   [9, 'nit', True, (1+2j), 9.3]

In [164...
```
print(l)
print(l2)
```

```
[100, 20, 30, 40, 50, -50, 20]
[9, 'nit', True, (1+2j), 9.3]
```

In [165...   `l`

Out[165...   [100, 20, 30, 40, 50, -50, 20]

In [166...   `l.index(100)`

Out[166...   0

In [167… `l.index(20)`

Out[167…   1

In [168… `l2`

Out[168…   `[9, 'nit', True, (1+2j), 9.3]`

In [169… `l2[1]`

Out[169…   `'nit'`

In [170… `l2[1][0]`

Out[170…   `'n'`

In [171… `l2`

Out[171…   `[9, 'nit', True, (1+2j), 9.3]`

In [172… `print(l2[1])`

          nit

In [173…
```
print(l2[1][0])
print(l2[1][1])
print(l2[1][2])
```

          n
          i
          t

In [174… `l`

Out[174…   `[100, 20, 30, 40, 50, -50, 20]`

In [175… `l[:]`

Out[175…   `[100, 20, 30, 40, 50, -50, 20]`

In [176… `l[3:]`

Out[176…   `[40, 50, -50, 20]`

In [177… `l`

Out[177…   `[100, 20, 30, 40, 50, -50, 20]`

In [178… `l[:10]`

Out[178…   `[100, 20, 30, 40, 50, -50, 20]`

In [179… `l`

Out[179…   [100, 20, 30, 40, 50, -50, 20]

In [180…   l[0:8:3]

Out[180…   [100, 40, 20]

In [181…   l2

Out[181…   [9, 'nit', True, (1+2j), 9.3]

In [182…   l2[1:6:2]

Out[182…   ['nit', (1+2j)]

In [183…   l

Out[183…   [100, 20, 30, 40, 50, -50, 20]

In [184…   l.insert(15,2)

In [185…   l

Out[185…   [100, 20, 30, 40, 50, -50, 20, 2]

In [186…   l.insert(2, 15)

In [187…   l

Out[187…   [100, 20, 15, 30, 40, 50, -50, 20, 2]

In [188…   l.pop()

Out[188…   2

In [189…   l

Out[189…   [100, 20, 15, 30, 40, 50, -50, 20]

In [190…   l.pop()

Out[190…   20

In [191…   l

Out[191…   [100, 20, 15, 30, 40, 50, -50]

In [192…   l.pop()

Out[192…   -50

In [193…   l

```
Out[193…   [100, 20, 15, 30, 40, 50]
```

```
In [194…   l2
```

```
Out[194…   [9, 'nit', True, (1+2j), 9.3]
```

```
In [195…   l2.pop(3)
```

```
Out[195…   (1+2j)
```

```
In [196…   l2
```

```
Out[196…   [9, 'nit', True, 9.3]
```

```
In [197…   l2
```

```
Out[197…   [9, 'nit', True, 9.3]
```

```
In [198…   l2.remove('nit')
```

```
In [199…   l2
```

```
Out[199…   [9, True, 9.3]
```

```
In [ ]:
```