PYTHON dATA STRUCTURE(LIST)

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

Out[2]: `[]`

In [3]:
```python
type(l)
```

Out[3]: `list`

In [4]:
```python
len(l)
```

Out[4]: `0`

In [5]:
```python
l.append()
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[5], line 1
----> 1 l.append()

TypeError: list.append() takes exactly one argument (0 given)
```

In [7]:
```python
l.append(10)
```

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

Out[8]: `[10]`

In [9]:
```python
l.append(20)
l.append(30)
l.append(40)
```

In [10]:
```python
l
```

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

In [11]:
```python
len(l)
```

Out[11]: `4`

In [12]:
```python
l.append(50)
```

In [13]:
```python
l
```

Out[13]: `[10, 20, 30, 40, 50]`

In [15]:
```python
l1=[10,30.5,'swapna',1+2j]
l1
```

Out[15]: `[10, 30.5, 'swapna', (1+2j)]`

In [16]:
```python
print(l)
print(l1)
```

```
[10, 20, 30, 40, 50]
[10, 30.5, 'swapna', (1+2j)]
```

In [19]:
```python
print(len(l))
print(len(l1))
```

```
5
4
```

In [21]:
```python
print(id(l))
print(id(l1))
```

```
1713028151232
1713082137920
```

In [22]:
```python
l2
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[22], line 1
----> 1 l2

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

In [23]:
```python
l2=l.copy()
l2
```

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

In [24]:
```python
l2==l
```

Out[24]: True

In [26]:
```python
print(l)
print(l1)
print(l2)
```

```
[10, 20, 30, 40, 50]
[10, 30.5, 'swapna', (1+2j)]
[10, 20, 30, 40, 50]
```

In [27]:
```python
l1==l2
```

Out[27]: False

In [28]:
```python
l
```

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

In [30]:
```python
l[:]
```

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

In [31]:
```python
l[0]
```

Out[31]: 10

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

Out[32]: 20

In [33]: `l[-1]`

Out[33]: 50

In [34]: `l[6]`

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last)
Cell In[34], line 1
----> 1 l[6]

IndexError: list index out of range
```

In [37]: `l`

Out[37]: `[10, 'jan', 30, 40, 50]`

In [39]: `l[-2]='feb'`

In [40]: `l`

Out[40]: `[10, 'jan', 30, 'feb', 50]`

In [43]: `l.append('swapna')`

In [44]: `l`

Out[44]: `[10, 'jan', 30, 'feb', 50, 'swapna']`

In [45]: `l.append(10)`

In [46]: `l`

Out[46]: `[10, 'jan', 30, 'feb', 50, 'swapna', 10]`

In [47]: `l1`

Out[47]: `[10, 30.5, 'swapna', (1+2j)]`

In [48]: `l2`

Out[48]: `[10, 20, 30, 40, 50]`

In [49]: `len(l2)`

Out[49]: 5

In [50]: `l2.clear`
         `l2`

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

```
In [51]:  len(l2)
```

```
Out[51]:  5
```

```
In [52]:  l2.clear()
          l2
```

```
Out[52]:  []
```

```
In [53]:  len(l2)
```

```
Out[53]:  0
```

```
In [54]:  print(len(l))
          print(len(l1))
```

```
7
4
```

```
In [55]:  print(l)
          print(l1)
```

```
[10, 'jan', 30, 'feb', 50, 'swapna', 10]
[10, 30.5, 'swapna', (1+2j)]
```

List Membership

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

```
Out[56]:  [10, 'jan', 30, 'feb', 50, 'swapna', 10]
```

```
In [58]:  'jan' in l
```

```
Out[58]:  True
```

```
In [59]:  30 in l
```

```
Out[59]:  True
```

```
In [60]:  60 in l
```

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

```
In [61]:  l.count(30)
```

```
Out[61]:  1
```

```
In [62]:  l.count(10)
```

```
Out[62]:  2
```

```
In [63]:  print(l)
          print(l1)
          print(l2)
```

```
[10, 'jan', 30, 'feb', 50, 'swapna', 10]
[10, 30.5, 'swapna', (1+2j)]
[]
```

In [64]: `len(l1)`

Out[64]: 4

In [65]: `len(l)`

Out[65]: 7

In [66]: `len(l2)`

Out[66]: 0

In [67]: `l`

Out[67]: `[10, 'jan', 30, 'feb', 50, 'swapna', 10]`

In [68]: `l1`

Out[68]: `[10, 30.5, 'swapna', (1+2j)]`

In [69]: `l2.extend(l)`

In [70]: `l2`

Out[70]: `[10, 'jan', 30, 'feb', 50, 'swapna', 10]`

In [71]: `l2.extend(l1)`

In [72]: `l2`

Out[72]: `[10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]`

In [73]: `l1.extend(l2)`

In [74]: `l1`

Out[74]:
```
[10,
 30.5,
 'swapna',
 (1+2j),
 10,
 'jan',
 30,
 'feb',
 50,
 'swapna',
 10,
 10,
 30.5,
 'swapna',
 (1+2j)]
```

In [75]: `len(l1)`

Out[75]:   15

In [76]:   ```
l
```

Out[76]:   [10, 'jan', 30, 'feb', 50, 'swapna', 10]

In [77]:   ```
l.index(30)
```

Out[77]:   2

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

Out[78]:   [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

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

Out[80]:   [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

In [81]:   ```
l2[:3]
```

Out[81]:   [10, 'jan', 30]

In [82]:   ```
l2[::3]
```

Out[82]:   [10, 'feb', 10, 'swapna']

In [84]:   ```
l2[:4]
```

Out[84]:   [10, 'jan', 30, 'feb']

In [85]:   ```
l2[::4]
```

Out[85]:   [10, 50, 30.5]

In [93]:   ```
l2
```

Out[93]:   [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

In [94]:   ```
l2[3:10]
```

Out[94]:   ['feb', 50, 'swapna', 10, 10, 30.5, 'swapna']

In [88]:   ```
l2[3::10]
```

Out[88]:   ['feb']

In [89]:   ```
l2[4:10]
```

Out[89]:   [50, 'swapna', 10, 10, 30.5, 'swapna']

In [90]:   ```
l2[4::10]
```

Out[90]:   [50]

In [91]:   ```
l2[2:10]
```

Out[91]: [30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna']

In [92]: l2[2::9]

Out[92]: [30]

In [95]: l2[2::10]

Out[95]: [30]

In [96]: l2[2:]

Out[96]: [30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

In [97]: l2[2::]

Out[97]: [30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

BACKWARD INDEXING AND BACKWARD SLICING

In [99]: l2

Out[99]: [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

In [100… l2[:]

Out[100… [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

In [101… l2[::]

Out[101… [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]

In [102… l2[:-3]

Out[102… [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10]

In [103… l2[-3:]

Out[103… [30.5, 'swapna', (1+2j)]

In [104… l2[::-1]

Out[104… [(1+2j), 'swapna', 30.5, 10, 10, 'swapna', 50, 'feb', 30, 'jan', 10]

In [105… l2[:-1]

Out[105… [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna']

In [106… l2[-1:]

Out[106… [(1+2j)]

In [107… l2[:-9]

Out[107… [10, 'jan']

```
In [108…  l2[-9:]
```

```
Out[108…  [30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]
```

```
In [109…  l2
```

```
Out[109…  [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]
```

```
In [110…  l2[3:-3]
```

```
Out[110…  ['feb', 50, 'swapna', 10, 10]
```

```
In [111…  l2
```

```
Out[111…  [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]
```

```
In [112…  l2[:3]
```

```
Out[112…  [10, 'jan', 30]
```

```
In [113…  l2[:-3]
```

```
Out[113…  [10, 'jan', 30, 'feb', 50, 'swapna', 10, 10]
```

```
In [114…  l2[::-3]
```

```
Out[114…  [(1+2j), 10, 50, 'jan']
```

```
In [115…  l2[-3:]
```

```
Out[115…  [30.5, 'swapna', (1+2j)]
```

```
In [116…  l
```

```
Out[116…  [10, 'jan', 30, 'feb', 50, 'swapna', 10]
```

```
In [117…  l1
```

```
Out[117…  [10,
           30.5,
           'swapna',
           (1+2j),
           10,
           'jan',
           30,
           'feb',
           50,
           'swapna',
           10,
           10,
           30.5,
           'swapna',
           (1+2j)]
```

```
In [118…  l2
```

Out[118... `[10, 'jan', 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]`

In [119...
```python
l2.remove('jan')
```

In [120...
```python
l2
```

Out[120... `[10, 30, 'feb', 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]`

In [121...
```python
l2.remove('feb')
```

In [122...
```python
l2
```

Out[122... `[10, 30, 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j)]`

In [123...
```python
l2.append('jan')
```

In [124...
```python
l2
```

Out[124... `[10, 30, 50, 'swapna', 10, 10, 30.5, 'swapna', (1+2j), 'jan']`

In [125...
```python
l2.count(10)
```

Out[125... `3`

In [126...
```python
l2.clear()
```

In [127...
```python
l2
```

Out[127... `[]`

In [128...
```python
len(l2)
```

Out[128... `0`

In [129...
```python
l2
```

Out[129... `[]`

In [130...
```python
l
```

Out[130... `[10, 'jan', 30, 'feb', 50, 'swapna', 10]`

In [131...
```python
l[:3]
```

Out[131... `[10, 'jan', 30]`

In [132...
```python
l[::3]
```

Out[132... `[10, 'feb', 10]`

In [ ]:
```python
l[
```