# Data Strucure

- LIST
- TUPLE
- SET
- DICT
- RANGE

# 1. LIST

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

Out[1]: []

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

Out[2]: list

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

Out[3]: 0

```
In [4]: print(type(l))
        print(len(l))
```

```
<class 'list'>
0
```

```
In [5]: 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 [6]: l.append(10)
        l.append(20)
        l.append(30)
```

```
In [7]: l
```

Out[7]: [10, 20, 30]

```
In [8]: l=[10, 20, 30, 40,]
        l
```

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

```
In [9]:  l.append(50)
         L
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[9], line 2
      1 l.append(50)
----> 2 L

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

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

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

```
In [11]:  l1 = [10,2.5,'ten',True,(2+3j)]
          l1
```

```
Out[11]:  [10, 2.5, 'ten', True, (2+3j)]
```

```
In [12]:  print(l)
          print(l1)
          print(len(l),len(l1))
          print(id(l),id(l1))
```

```
[10, 20, 30, 40, 50]
[10, 2.5, 'ten', True, (2+3j)]
5 5
2576308729024 2576294262464
```

```
In [13]:  l.clear
```

```
Out[13]:  <function list.clear()>
```

```
In [14]:  l
```

```
Out[14]:  [10, 20, 30, 40, 50]
```

```
In [15]:  print(l[0])
          print(l[1])
          print(l[2])
          print(l[-1])
```

```
10
20
30
50
```

```
In [16]:  l2=l1.copy()
          l2
```

```
Out[16]:  [10, 2.5, 'ten', True, (2+3j)]
```

```
In [17]:  l1==l2
```

```
Out[17]:  True
```

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

Out[18]: False

In [19]: 
```python
l[0]=100 # changing valuces is called mutable
l
```

Out[19]: [100, 20, 30, 40, 50]

In [20]: 
```python
l.append('jan')
l
```

Out[20]: [100, 20, 30, 40, 50, 'jan']

In [21]: 
```python
l[0:4]
```

Out[21]: [100, 20, 30, 40]

In [22]: 
```python
l[0:5:2]
```

Out[22]: [100, 30, 50]

In [23]: 
```python
l[::2]
```

Out[23]: [100, 30, 50]

In [24]: 
```python
l.clear()
```

In [25]: 
```python
l
```

Out[25]: []

In [26]: 
```python
len(l)
```

Out[26]: 0

In [27]: 
```python
del l
l
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[27], line 2
      1 del l
----> 2 l

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

In [28]: 
```python
l=[100, 20, 30, 40, 50, 'jan']
l
```

Out[28]: [100, 20, 30, 40, 50, 'jan']

In [29]: 
```python
l.count(20)
```

Out[29]: 1

```
In [30]: print(l.count('jan'))
```

```
1
```

```
In [31]: # list mebership
```

```
In [32]: l
```

```
Out[32]: [100, 20, 30, 40, 50, 'jan']
```

```
In [33]: print(100 in l)
         print(50 in l)
         print(200 in l)
```

```
True
True
False
```

```
In [34]: print(l)
         print(l1)
         print(l2)
```

```
[100, 20, 30, 40, 50, 'jan']
[10, 2.5, 'ten', True, (2+3j)]
[10, 2.5, 'ten', True, (2+3j)]
```

```
In [35]: l1.append('srikar')
         l2.clear()
```

```
In [36]: print(l1)
         print(l2)
```

```
[10, 2.5, 'ten', True, (2+3j), 'srikar']
[]
```

```
In [37]: l2.extend(l)
         l2
```

```
Out[37]: [100, 20, 30, 40, 50, 'jan']
```

```
In [38]: l2.extend(l1)
         l2
```

```
Out[38]: [100, 20, 30, 40, 50, 'jan', 10, 2.5, 'ten', True, (2+3j), 'srikar']
```

```
In [39]: l2.remove(2.5)
         l2
```

```
Out[39]: [100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']
```

```
In [40]: print(l)
         print(l1)
         print(l2)
```

```
[100, 20, 30, 40, 50, 'jan']
[10, 2.5, 'ten', True, (2+3j), 'srikar']
[100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']
```

```
In [41]: l1.extend(l2)
```

```
l1
```

Out[41]:
```
[10,
 2.5,
 'ten',
 True,
 (2+3j),
 'srikar',
 100,
 20,
 30,
 40,
 50,
 'jan',
 10,
 'ten',
 True,
 (2+3j),
 'srikar']
```

In [42]:
```python
l.index('jan')
```

Out[42]: 5

In [43]:
```python
l
```

Out[43]: `[100, 20, 30, 40, 50, 'jan']`

In [44]:
```python
l[:]
```

Out[44]: `[100, 20, 30, 40, 50, 'jan']`

In [45]:
```python
l2[2:4]
```

Out[45]: `[30, 40]`

In [46]:
```python
l2
```

Out[46]: `[100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']`

In [47]:
```python
print(l2[:4])
print(l2[0:10])
print(l2[3:8])
print(l2[:4])
print(l2[::4])
```

```
[100, 20, 30, 40]
[100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j)]
[40, 50, 'jan', 10, 'ten']
[100, 20, 30, 40]
[100, 50, True]
```

# backward indexing, backward slicing

In [48]:
```python
l2
```

Out[48]:   [100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']

In [49]:
```python
print(l2[-4])
print(l2[:-8])
print(l2[-4:])
print(l2[::-4])
print(l2[3:-3])
print(l2[::-1])
```

```
ten
[100, 20, 30]
['ten', True, (2+3j), 'srikar']
['srikar', 10, 30]
[40, 50, 'jan', 10, 'ten']
['srikar', (2+3j), True, 'ten', 10, 'jan', 50, 40, 30, 20, 100]
```

# 23rd oct classwork

In [50]:
```python
l2
```

Out[50]:   [100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']

In [52]:
```python
print(l)
print(l1)
print(l2)
```

```
[100, 20, 30, 40, 50, 'jan']
[10, 2.5, 'ten', True, (2+3j), 'srikar', 100, 20, 30, 40, 50, 'jan', 10, 'ten', T
rue, (2+3j), 'srikar']
[100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']
```

In [55]:
```python
l1=l2.copy()
l1
```

Out[55]:   [100, 20, 30, 40, 50, 'jan', 10, 'ten', True, (2+3j), 'srikar']

In [56]:
```python
l1.remove(10)
l1
```

Out[56]:   [100, 20, 30, 40, 50, 'jan', 'ten', True, (2+3j), 'srikar']

In [59]:
```python
l1.insert(1,10)
l1
```

Out[59]:   [100, 10, 10, 10, 20, 30, 40, 50, 'jan', 'ten', True, (2+3j), 'srikar']

In [62]:
```python
l1.remove(10)
l1
```

Out[62]:   [100, 20, 30, 40, 50, 'jan', 'ten', True, (2+3j), 'srikar']

In [63]:
```python
l1.insert(1,10)
l1
```

Out[63]:   [100, 10, 20, 30, 40, 50, 'jan', 'ten', True, (2+3j), 'srikar']

```python
In [64]: l1.pop(-2)
```

```
Out[64]: (2+3j)
```

```python
In [65]: l1
```

```
Out[65]: [100, 10, 20, 30, 40, 50, 'jan', 'ten', True, 'srikar']
```

```python
In [66]: l1.sort()
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[66], line 1
----> 1 l1.sort()

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

```python
In [67]: l
```

```
Out[67]: [100, 20, 30, 40, 50, 'jan']
```

```python
In [68]: l.pop(-1)
```

```
Out[68]: 'jan'
```

```python
In [72]: l.sort()
         l
```

```
Out[72]: [20, 30, 40, 50, 100]
```

```python
In [76]: l.sort(reverse=True)
         l
```

```
Out[76]: [100, 50, 40, 30, 20]
```

```python
In [77]: l.sort(reverse=False)
         l
```

```
Out[77]: [20, 30, 40, 50, 100]
```

```python
In [80]: l.sort(key=None)
         l
```

```
Out[80]: [20, 30, 40, 50, 100]
```

```python
In [81]: l.reverse()
         l
```

```
Out[81]: [100, 50, 40, 30, 20]
```

```python
In [84]: l.reverse()
         l
```

```
Out[84]: [20, 30, 40, 50, 100]
```

```
In [86]: for i in l:
             print(i)

20
30
40
50
100
```

```
In [87]: l1
```

Out[87]: [100, 10, 20, 30, 40, 50, 'jan', 'ten', True, 'srikar']

```
In [89]: print(l1[6][0]) # nested indexing
         print(l1[6][1])
         print(l1[6][2])

j
a
n
```

```
In [90]: for i in enumerate(l):
             print(i)

(0, 20)
(1, 30)
(2, 40)
(3, 50)
(4, 100)
```

```
In [91]: print(all(l))
         print(any(l))

True
True
```

```
In [92]: l.insert(5,0)
```

```
In [93]: print(all(l))
         print(any(l))

False
True
```

In [ ]: