In [1]: ```python
DATA STRUCTURES
```

In [2]: ```python
#LIST
#TUPLE
#SET
#DICT
#RANGE
```

In [3]: ```python
LIST
```

In [4]: ```python
L=[]
L
```

Out[4]: `[]`

In [5]: ```python
type(L)
```

Out[5]: `list`

In [7]: ```python
len(L)
```

Out[7]: `0`

In [ ]: ```python
#-----------------1 append() function
```

In [9]: ```python
L.append()
```

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

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

In [10]: ```python
L.append(1)
```

In [11]: ```python
L
```

Out[11]: `[1]`

In [12]: ```python
L.append(10)
L.append(23)
L.append(34)
```

In [13]: ```python
L
```

Out[13]: `[1, 10, 23, 34]`

```
In [14]:   #
```

```
In [15]:   l1=[10,2.3,'str',True,1+2j]
```

```
In [16]:   l1
```

```
Out[16]:   [10, 2.3, 'str', True, (1+2j)]
```

```
In [17]:   print(L)
           print(l1)
```

```
[1, 10, 23, 34]
[10, 2.3, 'str', True, (1+2j)]
```

```
In [18]:   print(len(L))
           print(len(l1))
```

```
4
5
```

```
In [20]:   print(id(L))
           print(id(1))
```

```
4373475840
4320464056
```

```
In [ ]:    #------------------ copy() function

           l2=l1.copy()
```

```
In [22]:   l2= l1.copy()
```

```
In [23]:   l2
```

```
Out[23]:   [10, 2.3, 'str', True, (1+2j)]
```

```
In [24]:   l1==l2
```

```
Out[24]:   True
```

```
In [25]:   L==l2
```

```
Out[25]:   False
```

```
In [26]:   L!=l2
```

```
Out[26]:   True
```

```
In [30]:   # ----mutable or changable  changing index element to new elememt
```

```
In [31]:   l2
```

```
Out[31]:  [10, 2.3, 'str', True, 34]
```

```
In [32]:  l2[-1]= 'jan'
          l2
```

```
Out[32]:  [10, 2.3, 'str', True, 'jan']
```

```
In [34]:  l2.append(10)
          l2
```

```
Out[34]:  [10, 2.3, 'str', True, 'jan', 10]
```

```
In [ ]:  # -------------- clear() function
```

```
In [35]:  #  clear()(
          l1.clear()
          l1
```

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

```
In [36]:  len(l1)
```

```
Out[36]:  0
```

```
In [37]:  del l1
```

```
In [38]:  id(l1)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call las
t)
Cell In[38], line 1
----> 1 id(l1)

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

```
In [39]:  # ---------------count() function
```

```
In [40]:  l1=[10,23,12]
          l2.count(10)
```

```
Out[40]:  2
```

```
In [41]:  # ---------------extend()
```

```
In [43]:  print(L)
          print(l2)
```

```
          [1, 10, 23, 34]
          [10, 2.3, 'str', True, 'jan', 10]
```

In [45]:
```
l2.extend(L)
l2
```

Out[45]: `[10, 2.3, 'str', True, 'jan', 10, 1, 10, 23, 34, 1, 10, 23, 34]`

In [ ]:
```
#list membership
```

In [ ]:
```
#----------------index() function
```

In [46]:
```
l2.index(34)
```

Out[46]: 9

In [47]:
```
# advanced slicing
#forwad indexing ans slicing
```

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

Out[48]: `[10, 2.3, 'str', True, 'jan', 10, 1, 10, 23, 34, 1, 10, 23, 34]`

In [49]:
```
l2[0:6]
```

Out[49]: `[10, 2.3, 'str', True, 'jan', 10]`

In [50]:
```
l2[3:10]
```

Out[50]: `[True, 'jan', 10, 1, 10, 23, 34]`

In [51]:
```
l2[::2]      # jump 2
```

Out[51]: `[10, 'str', 'jan', 1, 23, 1, 23]`

In [52]:
```
l2[::5]
```

Out[52]: `[10, 10, 1]`

In [53]:
```
# backward indexing and slicing
```

In [54]:
```
l2[-5]
```

Out[54]: 34

In [55]:
```
l2[:-9]
```

Out[55]: `[10, 2.3, 'str', True, 'jan']`

In [56]:
```
l2
```

Out[56]:   [10, 2.3, 'str', True, 'jan', 10, 1, 10, 23, 34, 1, 10, 23, 34]

In [57]:   l2[-3:]

Out[57]:   [10, 23, 34]

In [58]:   l2[3:-3]

Out[58]:   [True, 'jan', 10, 1, 10, 23, 34, 1]

In [60]:   l2[::-1]

Out[60]:   [34, 23, 10, 1, 34, 23, 10, 1, 10, 'jan', True, 'str', 2.3, 10]

In [61]:   l2[:-1]

Out[61]:   [10, 2.3, 'str', True, 'jan', 10, 1, 10, 23, 34, 1, 10, 23]

In [63]:
```python
print(L)

print(l2)
```

```
[1, 10, 23, 34]
[10, 2.3, 'str', True, 'jan', 10, 1, 10, 23, 34, 1, 10, 23, 34]
```

In [ ]:   #=------------- remove() function

In [64]:
```python
l2.remove(10)
l2
```

Out[64]:   [2.3, 'str', True, 'jan', 10, 1, 10, 23, 34, 1, 10, 23, 34]

In [65]:
```python
l2.remove(10)
l2
```

Out[65]:   [2.3, 'str', True, 'jan', 1, 10, 23, 34, 1, 10, 23, 34]

In [ ]: