In [1]:
```
t1=()
```

In [2]:
```
t2=(10,20,30)
```

In [3]:
```
t3=(10.5,3.14,5.68)
```

In [5]:
```
t4=('cat','dog','ant')
```

In [7]:
```
t5=('nit',10,(10,15),(50,100))
```

In [8]:
```
t6=(100,'text',15.68)
```

In [10]:
```
t7=('dola',10,[20,50],[60,90],{'ravi','kiran'},(9,10,20))
```

In [11]:
```
len(t7)
```

Out[11]: 6

In [12]:
```
len(t5)
```

Out[12]: 4

tuple indexing

In [13]:
```
t5[3]
```

Out[13]: (50, 100)

In [14]:
```
t7[0][0]
```

Out[14]: 'd'

In [16]:
```
t7[4][2]
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[16], line 1
----> 1 t7[4][2]

TypeError: 'set' object is not subscriptable
```

In [17]:
```
t7[5][0]
```

Out[17]: 9

tuple slicing

In [20]:
```
tuple=('one','two','three','four','five','six','seven','eight','nine')
tuple
```

Out[20]: ('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine')

In [21]:
```
tuple[:2]
```

Out[21]: ('one', 'two')

In [22]:
```
tuple[4:]
```

Out[22]: ('five', 'six', 'seven', 'eight', 'nine')

In [23]:
```
tuple[-5]
```

Out[23]: 'five'

In [24]:
```
tuple[-3]
```

Out[24]: 'seven'

In [25]:
```
del tuple[0]
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[25], line 1
----> 1 del tuple[0]

TypeError: 'tuple' object doesn't support item deletion
```

In [26]:
```
tuple
```

Out[26]: ('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine')

In [27]:
```
for i in tuple:
    print(i)
```

```
one
two
three
four
five
six
seven
eight
nine
```

In [28]:
```
for i in enumerate(tuple):
    print(i)
```

```
(0, 'one')
(1, 'two')
(2, 'three')
(3, 'four')
(4, 'five')
(5, 'six')
(6, 'seven')
(7, 'eight')
(8, 'nine')
```

In [29]:
```
tuple.count('two')
```

Out[29]: 1

In [30]:
```
2 in tuple
```

Out[30]:
```
False
```

Index position

In [31]:
```
tuple
```

Out[31]:
```
('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine')
```

In [32]:
```
tuple.index('seven')
```

Out[32]:
```
6
```

sorting

In [33]:
```
tuple
```

Out[33]:
```
('one', 'two', 'three', 'four', 'five', 'six', 'seven', 'eight', 'nine')
```

In [34]:
```
sorted(tuple,reverse=False)
```

Out[34]:
```
['eight', 'five', 'four', 'nine', 'one', 'seven', 'six', 'three', 'two']
```

In [35]:
```
sorted(tuple,reverse=True)
```

Out[35]:
```
['two', 'three', 'six', 'seven', 'one', 'nine', 'four', 'five', 'eight']
```

Sets

In [42]:
```
s={1,2,3,4,5,6}
s
```

Out[42]:
```
{1, 2, 3, 4, 5, 6}
```

In [37]:
```
len(s)
```

Out[37]:
```
6
```

In [38]:
```
s2={1,2,2,3,3,3,4,5,5}
s2
```

Out[38]:
```
{1, 2, 3, 4, 5}
```

In [39]:
```
len(s2)
```

Out[39]:
```
5
```

In [40]:
```
s=set()
print(type(s))
```

```
<class 'set'>
```

In [43]:
```
s
```

Out[43]: {1, 2, 3, 4, 5, 6}

In [44]:
```
for i in s:
    print(i)
```

```
1
2
3
4
5
6
```

In [45]:
```
for i in enumerate(s):
    print(i)
```

```
(0, 1)
(1, 2)
(2, 3)
(3, 4)
(4, 5)
(5, 6)
```

Add & remove items

In [46]:
```
s
```

Out[46]: {1, 2, 3, 4, 5, 6}

In [48]:
```
s.add(7)
s
```

Out[48]: {1, 2, 3, 4, 5, 6, 7}

In [49]:
```
s.update(10,20,30)
s
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[49], line 1
----> 1 s.update(10,20,30)
      2 s

TypeError: 'int' object is not iterable
```

In [52]:
```
set={'one','two','three','four','five','six','seven','eight','nine'}
set
```

Out[52]: {'eight', 'five', 'four', 'nine', 'one', 'seven', 'six', 'three', 'two'}

In [53]:
```
set.update(['eleven','twelve','ten'])
```

In [54]:
```
set
```

Out[54]:
```
{'eight',
 'eleven',
 'five',
 'four',
 'nine',
 'one',
 'seven',
 'six',
 'ten',
 'three',
 'twelve',
 'two'}
```

In [55]:
```
set.remove('nine')
```

In [56]:
```
set.pop(3)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[56], line 1
----> 1 set.pop(3)

TypeError: set.pop() takes no arguments (1 given)
```

In [58]:
```
set.remove('nine')
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
Cell In[58], line 1
----> 1 set.remove('nine')

KeyError: 'nine'
```

In [59]:
```
set.discard('one')
```

Set operation

In [60]:
```
a={1,2,3,4,5}
b={4,5,6,7,8}
c={8,9,10}
```

In [61]:
```
a|b
```

Out[61]:
```
{1, 2, 3, 4, 5, 6, 7, 8}
```

In [62]:
```
a^b
```

Out[62]:
```
{1, 2, 3, 6, 7, 8}
```

In [64]:
```
a.union(b,c)
a
```

Out[64]:
```
{1, 2, 3, 4, 5}
```

Intersection

In [65]:
```
a={1,2,3,4,5}
b={4,5,6,7,8}
```

In [66]:
```
a&b
```

Out[66]: {4, 5}

In [67]:
```
a.intersection(b)
```

Out[67]: {4, 5}

In [68]:
```
a-b
```

Out[68]: {1, 2, 3}

In [71]:
```
a.difference(b)
```

Out[71]: {1, 2, 3}

In [72]:
```
b
```

Out[72]: {4, 5, 6, 7, 8}

In [73]:
```
a
```

Out[73]: {1, 2, 3, 4, 5}

In [74]:
```
b.difference_update(a)
```

In [75]:
```
b
```

Out[75]: {6, 7, 8}

Symmetric difference

In [76]:
```
a={1,2,3,4,5}
b={4,5,6,7,8}
```

In [77]:
```
a^b
```

Out[77]: {1, 2, 3, 6, 7, 8}

In [78]:
```
a^b==a.symmetric_difference(b)
```

Out[78]: True

In [79]:
```
a
```

Out[79]: {1, 2, 3, 4, 5}

Subset,Superset & Disjoint

In [80]:
```
A = {1,2,3,4,5,6,7,8,9}
B = {3,4,5,6,7,8}
C = {10,20,30,40}
```

In [86]:
```
B.issubset(A)
```

Out[86]: True

In [87]:
```
A.issuperset(B)
```

Out[87]: True

In [88]:
```
C.isdisjoint(A)
```

Out[88]: True

In [89]:
```
B.isdisjoint(A)
```

Out[89]: False

In [90]:
```
sum(A)
```

Out[90]: 45

In [91]:
```
max(A)
```

Out[91]: 9

In [92]:
```
min(A)
```

Out[92]: 1

In [93]:
```
len(A)
```

Out[93]: 9

In [94]:
```
list(enumerate(A))
```

Out[94]: [(0, 1), (1, 2), (2, 3), (3, 4), (4, 5), (5, 6), (6, 7), (7, 8), (8, 9)]

In [95]:
```
D=sorted(A,reverse=True)
D
```

Out[95]: [9, 8, 7, 6, 5, 4, 3, 2, 1]

In [96]:
```
sorted(D)
```

Out[96]: [1, 2, 3, 4, 5, 6, 7, 8, 9]

Dictionary

In [97]:
```
dict=dict()
dict
```

Out[97]:
```
{}
```

In [98]:
```
type(dict)
```

Out[98]:
```
dict
```

In [101…
```
dict={1:'one',2:'two',3:'three'}
dict
```

Out[101…
```
{1: 'one', 2: 'two', 3: 'three'}
```

In [109…
```
dict.keys()
```

Out[109…
```
dict_keys([1, 2, 3])
```

In [110…
```
dict.values()
```

Out[110…
```
dict_values(['one', 'two', 'three'])
```

In [ ]:
```

```