

Tuple

- immutable data type
- ()
- Tuple have index

In [2]:

```
1 # Create Empty tuple
2 a = ()
3 print(type(a))
4 b = tuple()
5 print(type(b))
```

```
<class 'tuple'>
<class 'tuple'>
```

In [5]:

```
1 a = (1,2,3,4,5)
2 print(a)
3 b = ('a','b','c','d')
4 print(b)
5 c = "narayana",'python',"programming",123,4152.2155
6 print(c,type(c))
```

```
(1, 2, 3, 4, 5)
('a', 'b', 'c', 'd')
('narayana', 'python', 'programming', 123, 4152.2155) <class 'tuple'>
```

In [6]:

```
1 a[2]
```

Out[6]:

3

In [8]:

```
1 a[1:45-40]
```

Out[8]:

(2, 3, 4, 5)

In [10]:

```
1 print(a+b+c)
```

```
(1, 2, 3, 4, 5, 'a', 'b', 'c', 'd', 'narayana', 'python', 'programming', 12
3, 4152.2155)
```

In [11]:

```
1 a*len(b)
```

Out[11]:

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

In [13]:

```
1 a*3
```

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-13-8ce765dcfa30> in <module>  
----> 1 a*b
```

TypeError: can't multiply sequence by non-int of type 'tuple'

In [14]:

```
1 len(15451515)
```

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-14-5dfe7de463d9> in <module>  
----> 1 len(15451515)
```

TypeError: object of type 'int' has no len()

In [15]:

```
1 d = 'check me'  
2 print(type(d))
```

```
<class 'str'>
```

In [16]:

```
1 e = ('hello')  
2 print(type(e))
```

```
<class 'str'>
```

In [17]:

```
1 f = ['hi']  
2 print(type(f))
```

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

In [19]:

```
1 # Update in Tuple not work
2 print(a)
3 a[0]= 21
```

(1, 2, 3, 4, 5)

```
-----
TypeError                                Traceback (most recent call last)
<ipython-input-19-1acd4b7d617b> in <module>
      1 # Update in Tuple
      2 print(a)
----> 3 a[0]= 21
```

TypeError: 'tuple' object does not support item assignment

In [20]:

```
1 # Index deletion not work
2 del a[1]
```

```
-----
TypeError                                Traceback (most recent call last)
<ipython-input-20-d982d7dc2a95> in <module>
----> 1 del a[1]
```

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

In [23]:

```
1 # Updation of Tuple using Builtin functions
2 #           Convert tuple to List
3 #           updation in List
4 #           Convert List to tuple
5 print(type(a))
6 a = list(a)
7 print(type(a))
8 # update List
9 a[0]= 6546535
10 print(type(a))
11 a = tuple(a)
12 print(type(a))
```

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

In [24]:

```
1 del a,b,c
```

In [25]:

```
1 a
```

```
-----  
NameError                                Traceback (most recent call last)  
<ipython-input-25-3f786850e387> in <module>  
----> 1 a
```

NameError: name 'a' is not defined

In [26]:

```
1 temp1 = ('a','b','c','d')  
2 temp2 = (1,2,3,4,5)  
3 temp1+temp2  
4
```

Out[26]:

('a', 'b', 'c', 'd', 1, 2, 3, 4, 5)

In [27]:

```
1 print(temp1,temp2)
```

('a', 'b', 'c', 'd') (1, 2, 3, 4, 5)

In [28]:

```
1 # print tuple methods list  
2 print(dir(tuple))
```

```
['__add__', '__class__', '__contains__', '__delattr__', '__dir__', '__doc__',  
  '__eq__', '__format__', '__ge__', '__getattribute__', '__getitem__', '__  
getnewargs__', '__gt__', '__hash__', '__init__', '__init_subclass__', '__ite  
r__', '__le__', '__len__', '__lt__', '__mul__', '__ne__', '__new__', '__redu  
ce__', '__reduce_ex__', '__repr__', '__rmul__', '__setattr__', '__sizeof__',  
  '__str__', '__subclasshook__', 'count', 'index']
```

In [29]:

```
1 # count()  
2 temp1.count('a')
```

Out[29]:

1

In [30]:

```
1 temp1.count('z')
```

Out[30]:

0

In [31]:

```
1 # index()
2 temp2.index(1)
```

Out[31]:

0

In [32]:

```
1 temp2.index(9)
```

```
-----
ValueError                                Traceback (most recent call last)
<ipython-input-32-51a1c6a034ea> in <module>
----> 1 temp2.index(9)
```

ValueError: tuple.index(x): x not in tuple

In [34]:

```
1 len(temp1)
```

Out[34]:

4

In [35]:

```
1 min(temp1)
```

Out[35]:

'a'

In [36]:

```
1 max(temp1)
```

Out[36]:

'd'

Dictionary

- collection of items
- Every item is a pair of Key and value
- don't have default index
- Every item separated with ,
- {}
- key & value are separated with ':'

In [38]:

```
1 dict1 = {1:'a', 2:'b',3:'c'}
2 print(type(dict1))
3 print(dict1)
```

```
<class 'dict'>
{1: 'a', 2: 'b', 3: 'c'}
```

In [39]:

```
1 # Declare Empty Dictionary
2 a = dict()
3 print(type(a))
```

```
<class 'dict'>
```

In [40]:

```
1 b = {}
2 print(type(b))
```

```
<class 'dict'>
```

In [42]:

```
1 # print values from dictioary
2 print(dict1[1])
3 print(dict1[3])
```

```
a
c
```

In [43]:

```
1 temp = {1:'narayana',2.2:1,'hi':'hello',(1,2):[44,55]}
2 print(temp)
```

```
{1: 'narayana', 2.2: 1, 'hi': 'hello', (1, 2): [44, 55]}
```

In [44]:

```
1 temp[(1,2)]
```

Out[44]:

```
[44, 55]
```

In [45]:

```
1 temp[2.2]
```

Out[45]:

```
1
```

In [46]:

```
1 temp2 = {'a': 'hello'} # keys are not accepted mutable datatype
```

TypeError

Traceback (most recent call last)

<ipython-input-46-7b08c34b45fd> in <module>

```
----> 1 temp2 = {'a': 'hello'}
```

TypeError: unhashable type: 'list'

In [47]:

```
1 a = {'name': 'narayana', 'branch': 'cse', 'mobile': 354556, 'name': 'ravi'}
```

In [48]:

```
1 a
```

Out[48]:

```
{'name': 'ravi', 'branch': 'cse', 'mobile': 354556}
```

In [49]:

```
1 # update values in dict using key
2 a['name'] = 'ayyapa'
3 print(a)
```

```
{'name': 'ayyapa', 'branch': 'cse', 'mobile': 354556}
```

In [50]:

```
1 a['district'] = 'W.G.Dist'
```

In [51]:

```
1 print(a)
```

```
{'name': 'ayyapa', 'branch': 'cse', 'mobile': 354556, 'district': 'W.G.Dist'}
```

In [52]:

```
1 # Dictionary Methods
2 print(dir(dict))
```

```
['__class__', '__contains__', '__delattr__', '__delitem__', '__dir__', '__doc__', '__eq__', '__format__', '__ge__', '__getattr__', '__getitem__', '__gt__', '__hash__', '__init__', '__init_subclass__', '__iter__', '__le__', '__len__', '__lt__', '__ne__', '__new__', '__reduce__', '__reduce_ex__', '__repr__', '__setattr__', '__setitem__', '__sizeof__', '__str__', '__subclasshook__', 'clear', 'copy', 'fromkeys', 'get', 'items', 'keys', 'pop', 'popitem', 'setdefault', 'update', 'values']
```

In [53]:

```
1 # items()
2 a.items()
```

Out[53]:

```
dict_items([('name', 'ayyapa'), ('branch', 'cse'), ('mobile', 354556), ('district', 'W.G.Dist')])
```

In [54]:

```
1 list(a.items())
```

Out[54]:

```
[('name', 'ayyapa'),
 ('branch', 'cse'),
 ('mobile', 354556),
 ('district', 'W.G.Dist')]
```

In [55]:

```
1 tuple(a.items())
```

Out[55]:

```
((('name', 'ayyapa'),
 ('branch', 'cse'),
 ('mobile', 354556),
 ('district', 'W.G.Dist')))
```

In [58]:

```
1 # print only 2 items from a variable
2 list(a.items())[:3]
```

Out[58]:

```
[('name', 'ayyapa'), ('branch', 'cse'), ('mobile', 354556)]
```

In [59]:

```
1 # keys() ---> all keys from dict
2 a.keys()
```

Out[59]:

```
dict_keys(['name', 'branch', 'mobile', 'district'])
```

In [60]:

```
1 # values() # --> returns all values from Dict
2 a.values()
```

Out[60]:

```
dict_values(['ayyapa', 'cse', 354556, 'W.G.Dist'])
```


In [61]:

```
1 # get() # --> returns value using key
2 a.get('name')
```

Out[61]:

'ayyapa'

In [62]:

```
1 a.get('section','A dict not have section')
```

Out[62]:

'A dict not have section'

In [64]:

```
1 a.get('section')
```

In [65]:

```
1 a.get('name',"Not Found...")
```

Out[65]:

'ayyapa'

In [66]:

```
1 # copy() --> copy the values
2 q = a.copy()
3 print(q,a)
```

```
{'name': 'ayyapa', 'branch': 'cse', 'mobile': 354556, 'district': 'W.G.Dist'} {'name': 'ayyapa', 'branch': 'cse', 'mobile': 354556, 'district': 'W.G.Dist'}
```

In [67]:

```
1 q[141]=16164
2 print(q,a)
```

```
{'name': 'ayyapa', 'branch': 'cse', 'mobile': 354556, 'district': 'W.G.Dist', 141: 16164} {'name': 'ayyapa', 'branch': 'cse', 'mobile': 354556, 'district': 'W.G.Dist'}
```

In [68]:

```
1 # pop()
2 a.pop()# reqioered one Argument
```

TypeError Traceback (most recent call last)

<ipython-input-68-35cbe9b366cf> in <module>

1 # pop()

----> 2 a.pop()

TypeError: pop expected at least 1 arguments, got 0

In [69]:

```
1 a.pop('branch')
```

Out[69]:

```
'cse'
```

In [70]:

```
1 a
```

Out[70]:

```
{'name': 'ayyapa', 'mobile': 354556, 'district': 'W.G.Dist'}
```

In [71]:

```
1 # popitem()  
2 a.popitem()
```

Out[71]:

```
('district', 'W.G.Dist')
```

In [72]:

```
1 a
```

Out[72]:

```
{'name': 'ayyapa', 'mobile': 354556}
```

In [75]:

```
1 # update()  
2 student_perform = {'Atitude':'good', 'speaking':'Average', 'behav':"very good"}
```

In [76]:

```
1 a.update(student_perform)
```

In [77]:

```
1 a
```

Out[77]:

```
{'name': 'ayyapa',  
 'mobile': 354556,  
 'Atitude': 'good',  
 'speaking': 'Average',  
 'behav': 'very good'}
```

In [80]:

```
1 a.update({'attendance':65, 'per':80, 'grade':'A'})
```

In [81]:

```
1 a
```

Out[81]:

```
{'name': 'ayyapa',  
'mobile': 354556,  
'Atitude': 'good',  
'speaking': 'Average',  
'behav': 'very good',  
'attendance': 65,  
'per': 80,  
'grade': 'A'}
```

In [83]:

```
1 # fromkeys()  
2 print(range(1,20))  
3 print(list(range(1,20)))
```

```
range(1, 20)  
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]
```

In [84]:

```
1 temp11 = {}  
2 temp11.fromkeys(list(range(1,5+1)))
```

Out[84]:

```
{1: None, 2: None, 3: None, 4: None, 5: None}
```

In [86]:

```
1 print(temp11.fromkeys(list(range(1,21,2)),123))
```

```
{1: 123, 3: 123, 5: 123, 7: 123, 9: 123, 11: 123, 13: 123, 15: 123, 17: 123,  
19: 123}
```

In [90]:

```
1 # setdefault(keyname,value)  
2 a.setdefault('attendance','P')
```

Out[90]:

```
65
```

In [91]:

```
1 a
```

Out[91]:

```
{'name': 'ayyapa',  
'mobile': 354556,  
'Atitude': 'good',  
'speaking': 'Average',  
'behav': 'very good',  
'attendance': 65,  
'per': 80,  
'grade': 'A',  
'Attendance': 'P'}
```

In [92]:

```
1 a.setdefault('state', 'AP')
```

Out[92]:

```
'AP'
```

In [93]:

```
1 a
```

Out[93]:

```
{'name': 'ayyapa',  
'mobile': 354556,  
'Atitude': 'good',  
'speaking': 'Average',  
'behav': 'very good',  
'attendance': 65,  
'per': 80,  
'grade': 'A',  
'Attendance': 'P',  
'state': 'AP'}
```

In [94]:

```
1 a.setdefault('country')
```

In [95]:

1	a
---	---

Out[95]:

```
{'name': 'ayyapa',  
'mobile': 354556,  
'Atitude': 'good',  
'speaking': 'Average',  
'behav': 'very good',  
'attendance': 65,  
'per': 80,  
'grade': 'A',  
'Attendance': 'P',  
'state': 'AP',  
'country': None}
```

In []:

1	
---	--