

# Basic data structures in python

## Tuple

### 1-Tuple

- ordered collection of elements
- enclosed in round braces ()
- different kind of elements can be stored
- unmutatbel(once elements stored can not be changed)

```
In [2]: tup1=(1,2.5,"Python",True)
tup1
```

```
Out[2]: (1, 2.5, 'Python', True)
```

```
In [3]: #type of a tuple
type(tup1)
```

```
Out[3]: tuple
```

### -indexing in tuple

```
In [4]: tup1[2]
```

```
Out[4]: 'Python'
```

```
In [5]: #last element is exclusive in python as it stars from 0
tup1[0:3]
```

```
Out[5]: (1, 2.5, 'Python')
```

```
In [6]: tup2=(3,33.5,"Naeem")
tup2
```

```
Out[6]: (3, 33.5, 'Naeem')
```

```
In [7]: tup1+tup2
```

```
Out[7]: (1, 2.5, 'Python', True, 3, 33.5, 'Naeem')
```

```
In [8]: #concatitae + repeat
tup1*2+tup2
```

```
Out[8]: (1, 2.5, 'Python', True, 1, 2.5, 'Python', True, 3, 33.5, 'Naeem')
```

```
In [9]: tup3=(34,56,76,90,99)
tup3
```

```
Out[9]: (34, 56, 76, 90, 99)
```

```
In [10]: min(tup3)
```

```
Out[10]: 34
```

```
In [11]: max(tup3)
```

```
Out[11]: 99
```

```
In [12]: tup3*2
```

```
Out[12]: (34, 56, 76, 90, 99, 34, 56, 76, 90, 99)
```

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## 2- list

- ordered collection of elements
- mutable we can change the values of its elements
- enclosed in round braces/brackets []

```
In [15]: list1=[34,45,"hello",4.6,False]
list1
```

```
Out[15]: [34, 45, 'hello', 4.6, False]
```

```
In [16]: list2=[34,89,"Python",True,4.6]
list2
```

```
Out[16]: [34, 89, 'Python', True, 4.6]
```

```
In [17]: list1+list2
```

```
Out[17]: [34, 45, 'hello', 4.6, False, 34, 89, 'Python', True, 4.6]
```

```
In [18]: len(list1)
```

```
Out[18]: 5
```

```
In [19]: type(list2)
```

```
Out[19]: list
```

```
In [20]: list1*2
```

```
Out[20]: [34, 45, 'hello', 4.6, False, 34, 45, 'hello', 4.6, False]
```

```
In [23]: list1
```

```
Out[23]: [34, 45, 'hello', 4.6, False]
```

```
In [24]: list1.reverse()  
list1
```

```
Out[24]: [False, 4.6, 'hello', 45, 34]
```

```
In [32]: list2
```

```
Out[32]: [34, 89, 'Python', 4.6]
```

```
In [37]: list2.pop(1)  
list2
```

```
Out[37]: [34]
```

---

## 3-Dictionaries

- unordered collection of elements
- key and value
- curly braces{}
- mutable

```
In [38]: #food and their prices  
d1={"samosa":30, "pakora":10, "chicken rolls":30, "Raita":15}  
d1
```

```
Out[38]: {'samosa': 30, 'pakora': 10, 'chicken rolls': 30, 'Raita': 15}
```

```
In [39]: type(d1)
```

```
Out[39]: dict
```

```
In [44]: #extract data  
values=d1.keys()  
values
```

```
Out[44]: dict_keys(['samosa', 'pakora', 'chicken rolls', 'Raita'])
```

```
In [45]: d1["Tikka"]=10  
d1
```

```
Out[45]: {'samosa': 30, 'pakora': 10, 'chicken rolls': 30, 'Raita': 15, 'Tikka': 10}
```

```
In [46]: food2={"Dates":50, "chocholates":20,"sawayan":150,}  
food2
```

```
Out[46]: {'Dates': 50, 'chocholates': 20, 'sawayan': 150}
```

```
In [49]: d1.update(food2)
d1
```

```
Out[49]: {'samosa': 30,
          'pakora': 10,
          'chiken rolls': 30,
          'Raita': 15,
          'Tikka': 10,
          'Dates': 50,
          'chocholates': 20,
          'sawayan': 150}
```

---

## -4 set

- unordered and unindexed
- curly braces are used
- no duplicates are allowed

```
In [53]: s1={2,4.5,"Naeem","codanics","Hello", True}
s1
```

```
Out[53]: {2, 4.5, 'Hello', 'Naeem', True, 'codanics'}
```

```
In [54]: s1.add("Naeem1")
s1
```

```
Out[54]: {2, 4.5, 'Hello', 'Naeem', 'Naeem1', True, 'codanics'}
```