

- Indexing

```
In [1]: #make a string  
  
a = "samosa pakora"  
a
```

```
Out[1]: 'samosa pakora'
```

```
In [2]: a
```

```
Out[2]: 'samosa pakora'
```

```
In [6]: #Length of indices  
len(a)
```

```
Out[6]: 13
```

```
In [3]: a[0]
```

```
Out[3]: 's'
```

```
In [4]: a[1]
```

```
Out[4]: 'a'
```

```
In [5]: a[3]
```

```
Out[5]: 'o'
```

```
In [8]: a[12]
```

```
Out[8]: 'a'
```

```
In [9]: a[0:5]
```

```
Out[9]: 'samos'
```

```
In [11]: #exculive element is the last one or last index is exclusive  
a[0:13]
```

```
Out[11]: 'samosa pakora'
```

```
In [12]: #will go in opposite/reverse
```

```
a[-2]
```

Out[12]: 'r'

```
In [13]: a[-6:-1]
```

Out[13]: 'pakor'

```
In [14]: a[-6:13]
```

Out[14]: 'pakora'

```
In [15]: food ="biryani"  
food
```

Out[15]: 'biryani'

- String methods

```
In [16]: food
```

Out[16]: 'biryani'

```
In [17]: len(food)
```

Out[17]: 7

```
In [18]: #capitalize every element  
food.capitalize()
```

Out[18]: 'Biryani'

```
In [19]: #upper case Letters  
food.upper()
```

Out[19]: 'BIRYANI'

```
In [20]: #Lower case Letters  
food.lower()
```

Out[20]: 'biryani'

```
In [21]: #RePlace Letters  
food.replace("b", "Sh")
```

Out[21]: 'Shiryani'

```
In [22]: #Counting a specific alphabet in a string  
name = "baba_ammam with Dr Ammar Tufail"  
name
```

Out[22]: 'baba_ammam with Dr Ammar Tufail'

```
In [23]: name.count("a")
```

Out[23]: 6

- Finding an index number in string

```
In [24]: name = "baba_aammam with Dr Aammam Tufail"  
name
```

Out[24]: 'baba_aammam with Dr Aammam Tufail'

```
In [25]: name.find("T")
```

Out[25]: 27

- How to split a string

```
In [26]: food = "i love samosa, pakora, raita and karhai"  
food
```

Out[26]: 'i love samosa, pakora, raita and karhai'

```
In [27]: #split through comma  
food.split(",")
```

Out[27]: ['i love samosa', ' pakora', ' raita and karhai']

- Basic data structures in python

1-Tuple

2-List

3-Dictionaries

4-Set

1-Tuple

- ordered collection of elements
- enclosed in () round brackets/parathesis
- Different kind of elements can be stored
- Once elements are stored you cant change them/unmutable

```
In [3]: tup1 = (1, "python", True, 2.5)
tup1
```

```
Out[3]: (1, 'python', True, 2.5)
```

```
In [4]: # type of tuple
type(tup1)
```

```
Out[4]: tuple
```

- Indexing in tuple

```
In [5]: tup1[0]
```

```
Out[5]: 1
```

```
In [6]: tup1[2]
```

```
Out[6]: True
```

```
In [7]: tup1[0:5]
```

```
Out[7]: (1, 'python', True, 2.5)
```

```
In [8]: tup1[2:5]
```

```
Out[8]: (True, 2.5)
```

```
In [9]: tup1[0:3]
```

```
Out[9]: (1, 'python', True)
```

```
In [10]: len(tup1)
```

```
Out[10]: 4
```

```
In [12]: tup2 = (2, "babaAammar", 3.5, False)
          tup2
```

```
Out[12]: (2, 'babaAammar', 3.5, False)
```

```
In [13]: #Concatinate (to add to tuple, can be more then 2)
          tup1+tup2
```

```
Out[13]: (1, 'python', True, 2.5, 2, 'babaAammar', 3.5, False)
```

```
In [14]: #concatinate + multiplcation
          tup1*2+tup2
```

```
Out[14]: (1, 'python', True, 2.5, 1, 'python', True, 2.5, 2, 'babaAammar', 3.5, False)
```

```
In [15]: tup3=(20,50,30,60,15)
          tup3
```

```
Out[15]: (20, 50, 30, 60, 15)
```

```
In [17]: #Minimum value
          min(tup3)
```

```
Out[17]: 15
```

```
In [18]: tup33
```

```
Out[18]: (20, 50, 30, 60, 15, 20, 50, 30, 60, 15, 20, 50, 30, 60, 15)
```

2-List

- Ordered collection of list
- enclosed in [] square brackets
- Mutable, you can change the values

```
In [19]: list1=[2, "babaAammar", False]
          list1
```

```
Out[19]: [2, 'babaAammar', False]
```

```
In [24]: type(list1)
```

Out[24]: list

```
In [26]: len(list1)
```

Out[26]: [2, 'babaAammar', False]

```
In [27]: list1[2]
```

Out[27]: False

```
In [29]: list2 = [3, 5, "Aammar", "Codanics", 478, 45.2, False]
list2
```

Out[29]: [3, 5, 'Aammar', 'Codanics', 478, 45.2, False]

```
In [30]: list1+list2
```

Out[30]: [2, 'babaAammar', False, 3, 5, 'Aammar', 'Codanics', 478, 45.2, False]

```
In [31]: list1*2
```

Out[31]: [2, 'babaAammar', False, 2, 'babaAammar', False]

```
In [36]: list1.reverse()
list1
```

Out[36]: [False, 'babaAammar', 2]

```
In [38]: list1.append("Codanics Youtube Channel")
list1
```

Out[38]: [False,
'babaAammar',
2,
'Codanics Youtube Channel',
'Codanics Youtube Channel']

```
In [39]: list1.count(2)
```

Out[39]: 1

```
In [40]: list1.count(4)
```

Out[40]: 0

```
In [44]: list1.count(2)
```

Out[44]: 1

```
In [45]: list3 = [20,30,40,50,12,32,45,34,65]
list3
```

Out[45]: [20, 30, 40, 50, 12, 32, 45, 34, 65]

```
In [46]: len(list3)
```

Out[46]: [20, 30, 40, 50, 12, 32, 45, 34, 65]

```
In [48]: #sorting a List
list3.sort()
list3
```

Out[48]: [12, 20, 30, 32, 34, 40, 45, 50, 65]

```
In [49]: list3*3
```

Out[49]: [12,
20,
30,
32,
34,
40,
45,
50,
65,
12,
20,
30,
32,
34,
40,
45,
50,
65,
12,
20,
30,
32,
34,
40,
45,
50,
65]

```
In [52]: list1+list3+list2
```

Out[52]: [False,
'babaAammar',
2,
'Codenics Youtube Channel',
'Codenics Youtube Channel',

```
12,  
20,  
30,  
32,  
34,  
40,  
45,  
50,  
65,  
3,  
5,  
'Aammar',  
'Codanics',  
478,  
45.2,  
False]
```

3- Dictionaries

- An unordered collection of elements
- Key and value
- Curly brackets { }
- Mutable/changeable

```
In [57]: #Food and theri prices, *unordered*  
  
food1 = {"samosa":30, "pakora":100, "raita":20, "salad":50, "chicken rolls":30}  
food1
```

```
Out[57]: {'samosa': 30, 'pakora': 100, 'raita': 20, 'salad': 50, 'chicken rolls': 30}
```

```
In [58]: type(food1)
```

```
Out[58]: dict
```

```
In [59]: #Extract data  
keys1 = food1.keys()  
keys1
```

```
Out[59]: dict_keys(['samosa', 'pakora', 'raita', 'salad', 'chicken rolls'])
```

```
In [60]: values1 = food1.values()  
values1
```

```
Out[60]: dict_values([30, 100, 20, 50, 30])
```

```
In [62]: #adding new value or mutate
```



```
food1["tikki"]=10  
food1
```

```
Out[62]: {'samosa': 30,  
          'pakora': 100,  
          'raita': 20,  
          'salad': 50,  
          'chicken rolls': 30,  
          'tikki': 10}
```

```
In [63]: #update the values  
food1["tikki"]=15  
food1
```

```
Out[63]: {'samosa': 30,  
          'pakora': 100,  
          'raita': 20,  
          'salad': 50,  
          'chicken rolls': 30,  
          'tikki': 15}
```

```
In [65]: food2={"dates":50, "chocolates":200, "swayyan":1000}  
food2
```

```
Out[65]: {'dates': 50, 'chocolates': 200, 'swayyan': 1000}
```

```
In [67]: #concatinate  
food1.update(food2)  
food1
```

```
Out[67]: {'samosa': 30,  
          'pakora': 100,  
          'raita': 20,  
          'salad': 50,  
          'chicken rolls': 30,  
          'tikki': 15,  
          'dates': 50,  
          'chocolates': 200,  
          'swayyan': 1000}
```

4-Sets

- Unordered and unindexed
- Use curly braces { }
- No duplicates allowed

```
In [72]: s1 = {1,2.2,5.2,"Aammar","Codenics","Faisalabad",}  
s1
```

```
Out[72]: {1, 2.2, 5.2, 'Aammar', 'Codenics', 'Faisalabad'}
```

```
In [75]: s1.remove("Aammar")  
s1
```

```
Out[75]: {1, 2.2, 5.2, 'Codenics', 'Faisalabad'}
```

```
In [82]: s1.discard(5.2)  
s1
```

```
Out[82]: {1, 2.2, 'Codenics', 'Faisalabad'}
```

```
In [84]: s1.discard("Faisalabad")  
s1
```

```
Out[84]: {1, 2.2, 'Codenics'}
```

```
In [85]: s2={"awais", "learning python"}  
s2
```

```
Out[85]: {'awais', 'learning python'}
```

```
In [86]: s1.union(s2)
```

```
Out[86]: {1, 2.2, 'Codenics', 'awais', 'learning python'}
```

```
In [90]: s1.update(s2)  
s1
```

```
Out[90]: {1, 2.2, 'Codenics', 'awais', 'learning python'}
```

```
In [91]: s1.difference(s2)
```

```
Out[91]: {1, 2.2, 'Codenics'}
```