_Indexing

make a string

In [1]:
```
a="Samosa Pakora"
a
```

Out[1]: 'Samosa Pakora'

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

Out[2]: 'Samosa Pakora'

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

Out[3]: 'S'

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

Out[4]: 'a'

In [5]:
```
a[2]
```

Out[5]: 'm'

In [6]:
```
a[3]
```

Out[6]: 'o'

In [7]:
```
a[4]
```

Out[7]: 's'

In [8]:
```
a[5]
```

Out[8]: 'a'

Length of indeces

In [9]:
```
len(a)
```

Out[9]: 13

In [10]:
```
a[0:13]
```

Out[10]:
```
'Samosa Pakora'
```

In [11]:
```
a[0:5]
```

Out[11]:
```
'Samos'
```

Last Index is Exclusive

In [12]:
```
a[0:6]
```

Out[12]:
```
'Samosa'
```

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

Out[13]:
```
'a'
```

In [14]:
```
a[-6:-1]
```

Out[14]:
```
'Pakor'
```

In [15]:
```
a[-6:13]
```

Out[15]:
```
'Pakora'
```

In [16]:
```
food="biryani"
food
```

Out[16]:
```
'biryani'
```

String methods

In [17]:
```
food
```

Out[17]:
```
'biryani'
```

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

Out[18]:
```
7
```

Capitalize every element

In [19]:
```
food.capitalize()
```

Out[19]:
```
'Biryani'
```

Uppercase Letters

In [20]:
```
food.upper()
```

Out[20]:
```
'BIRYANI'
```

Lowercase Letters

In [21]:
```
food.lower()
```

Out[21]:
```
'biryani'
```

Replace

In [22]:
```
food.replace("b","Sh")
```

Out[22]:
```
'Shiryani'
```

Counting a specific alphabet in a string

In [23]:
```
name="baba aammar with Dr Aammar Tufail"
name
```

Out[23]:
```
'baba aammar with Dr Aammar Tufail'
```

In [24]:
```
name.count("a")
```

Out[24]:
```
8
```

Finding an index number in string

In [25]:
```
name="baba aammar with Dr Aammar Tufail"
name
```

Out[25]:
```
'baba aammar with Dr Aammar Tufail'
```

In [26]:
```
name.find("D")
```

Out[26]:
```
17
```

In [27]:
```
name.find("A")
```

Out[27]:
```
20
```

In [28]:
```
name.find("T")
```

Out[28]:
```
27
```

How to split a string

In [29]:
```
food="I love samosa, pakora, raita, biryani and karahi"
food
```

Out[29]:
```
'I love samosa, pakora, raita, biryani and karahi'
```

food.split(",")

Basic data structure in Python

1-Tuple

2-List

3-Dictionaries

4-Set

1-***Tuple***

-ordered collection of elements

-enclosed in () round braces / paranthesis

-Different kind of elements can be stored

-Once elements are stored you can not change them (unmutatable) .It means you can not replace them.

-elements means

integers

strings

float number

boolean operator (True , False)

In [30]:
```
tup1 = (1,"python",True,2.5)
tup1
```

Out[30]:
```
(1, 'python', True, 2.5)
```

type of tuple

In [31]:
```
type(tup1)
```

Out[31]:
```
tuple
```

Indexing in tuple

In [32]:
```
tup1[2]
```

Out[32]:
```
True
```

In [33]:
```
tup1[1]
```

Out[33]:
```
'python'
```

In [34]:
```
tup1[0]
```

Out[34]:
```
1
```

In [35]:
```
tup1[3]
```

Out[35]:
```
2.5
```

Last element is exclusive

In [36]:
```
tup1[0:3]
```

Out[36]:
```
(1, 'python', True)
```

In [37]:
```
tup1[0:4]
```

Out[37]:
```
(1, 'python', True, 2.5)
```

count of element in tuple

In [38]:
```
len(tup1)
```

Out[38]:
```
4
```

Plusing tuples or concatinate (to add two tuple or >2)

In [39]:
```
tup2=(2,"baba Aammar",3.5,False)
tup2
```

Out[39]:
```
(2, 'baba Aammar', 3.5, False)
```

In [40]:
```
tup1+tup2
```

Out[40]:
```
(1, 'python', True, 2.5, 2, 'baba Aammar', 3.5, False)
```

Repeat + Concatinate

In [41]:
```
tup1*2+tup2
```

Out[41]:
```
(1, 'python', True, 2.5, 1, 'python', True, 2.5, 2, 'baba Aammar', 3.5, False)
```

In [42]:
```
tup3=(20,50,30,60,79,80)
tup3
```

Out[42]:
```
(20, 50, 30, 60, 79, 80)
```

minimum

In [43]:
```
min(tup3)
```

Out[43]:
```
20
```

maximum

In [44]:
```
max(tup3)
```

Out[44]:
```
80
```

In [45]:
```
tup3*2
```

Out[45]:
```
(20, 50, 30, 60, 79, 80, 20, 50, 30, 60, 79, 80)
```

In [46]:
```
tup3+tup2
```

Out[46]:
```
(20, 50, 30, 60, 79, 80, 2, 'baba Aammar', 3.5, False)
```

2-**List**

- **ordered collection of elements**
- **enclosed in [ ] square bracket/braces**
- **Mutateable, you can change the values**

In [47]:
```
list1=[2,"baba Aammar", False]
list1
```

Out[47]:
```
[2, 'baba Aammar', False]
```

In [48]:
```
type(list1)
```

Out[48]:
```
list
```

In [49]:
```
len(list1)
```

Out[49]:
```
3
```

In [50]:
```
list1[2]
```

Out[50]:
```
False
```

In [51]:
```
list2=[3,5,"Aammar","codanics",478,53.2,False]
list2
```

Out[51]:
```
[3, 5, 'Aammar', 'codanics', 478, 53.2, False]
```

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

Out[52]:
```
[2, 'baba Aammar', False, 3, 5, 'Aammar', 'codanics', 478, 53.2, False]
```

In [53]:
```
list1*2
```

Out[53]:
```
[2, 'baba Aammar', False, 2, 'baba Aammar', False]
```

In [54]:
```
list2*2
```

Out[54]:
```
[3,
 5,
 'Aammar',
 'codanics',
 478,
 53.2,
 False,
 3,
 5,
 'Aammar',
 'codanics',
 478,
 53.2,
 False]
```

In [55]:
```
list1
```

Out[55]:
```
[2, 'baba Aammar', False]
```

reverse

In [56]:
```
list1.reverse()
list1
```

Out[56]:
```
[False, 'baba Aammar', 2]
```

append or adding something to the existing list

In [57]:
```
list1.append("codanics Youtube channel")
list1
```

Out[57]:
```
[False, 'baba Aammar', 2, 'codanics Youtube channel']
```

count

In [58]:
```
list3=[1,2,3,5,3,3,4,6,7,8,4,1,2]
list3.count(2)
```

Out[58]:
```
2
```

clear

In [59]:
```
list4=[1,2,2,3,4,5,7,8,9,5,2,3,1,4,6]
list4.clear()
```

In [60]:
```
list4
```

Out[60]:
```
[]
```

In [61]:
```
list5=[20,30,40,45,50,55,6]
list5
```

Out[61]:
```
[20, 30, 40, 45, 50, 55, 6]
```

length

In [62]:
```
len(list5)
```

Out[62]:
```
7
```

In [63]:
```
list5[0:7]
```

Out[63]:
```
[20, 30, 40, 45, 50, 55, 6]
```

sort

In [64]:
```
list5.sort()
list5
```

Out[64]:
```
[6, 20, 30, 40, 45, 50, 55]
```

concatinate

In [65]:
```
list5+list4
```

Out[65]:
```
[6, 20, 30, 40, 45, 50, 55]
```

copy

In [66]:
```
list4=[0.20,22.3]
list4.copy()
list4
```

Out[66]:
```
[0.2, 22.3]
```

Extend

In [67]:
```
list6=[34,54,64]
list7=[24]
list7.extend(list6)
list7
```

Out[67]:
```
[24, 34, 54, 64]
```

In [68]:
```
list7=[24, 34, 54, 64]
index=list7.index(64)
index
```

Out[68]:
```
3
```

In [69]:
```
list7[2]
```

Out[69]:
```
54
```

In [70]:
```
list7
```

Out[70]:
```
[24, 34, 54, 64]
```

insert

In [71]:
```
list7.insert(5,84)
list7
```

Out[71]:
```
[24, 34, 54, 64, 84]
```

pop

In [72]:
```
list7.pop(3)
list7
```

Out[72]:
```
[24, 34, 54, 84]
```

append + sort

In [73]:
```
list7.append(14)
list7.sort()
list7
```

Out[73]:
```
[14, 24, 34, 54, 84]
```

In [74]:
```
list1+list7
```

Out[74]:
```
[False, 'baba Aammar', 2, 'codanics Youtube channel', 14, 24, 34, 54, 84]
```

3-Dictionaries

-An unordered collection of elements

-Key and Value

-Curly braces or brackets{ }

-Mutateable/change the value

Food and their prices

In [75]:
```
food1={"Samosa": 30,"Pakora":70,"Raita":20,"Salad":20,"Checken Rolls":40}
food1
```

Out[75]:
```
{'Samosa': 30, 'Pakora': 70, 'Raita': 20, 'Salad': 20, 'Checken Rolls': 40}
```

In [76]:
```
type(food1)
```

Out[76]:
```
dict
```

Extract data

In [77]:
```
keys1=food1.keys()
keys1
```

Out[77]:
```
dict_keys(['Samosa', 'Pakora', 'Raita', 'Salad', 'Checken Rolls'])
```

In [78]:
```
values1=food1.values()
values1
```

Out[78]:
```
dict_values([30, 70, 20, 20, 40])
```

Updating or Adding new element

In [79]:
```
food1["Tikki"]=10
food1
```

Out[79]:
```
{'Samosa': 30,
 'Pakora': 70,
 'Raita': 20,
 'Salad': 20,
 'Checken Rolls': 40,
 'Tikki': 10}
```

In [80]:
```
food1
food2={"Apple":25}
food1.update(food2)
food1
```

Out[80]:
```
{'Samosa': 30,
 'Pakora': 70,
 'Raita': 20,
 'Salad': 20,
 'Checken Rolls': 40,
 'Tikki': 10,
 'Apple': 25}
```

In [81]:
```
food1.items()
food1
```

Out[81]:
```
{'Samosa': 30,
 'Pakora': 70,
 'Raita': 20,
 'Salad': 20,
 'Checken Rolls': 40,
 'Tikki': 10,
 'Apple': 25}
```

In [82]:
```
food3={"Dates":50,"Chpclate":200,"sawayyan":1000}
food3
```

Out[82]:
```
{'Dates': 50, 'Chpclate': 200, 'sawayyan': 1000}
```

Concatinate

In [83]:
```
food1.update(food3)
food1
```

Out[83]:
```
{'Samosa': 30,
 'Pakora': 70,
 'Raita': 20,
 'Salad': 20,
 'Checken Rolls': 40,
 'Tikki': 10,
 'Apple': 25,
```

```
 'Dates': 50,
 'Chpclate': 200,
 'sawayyan': 1000}
```

pop

In [84]:
```
food1.pop("tikki")
food1
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
C:\Users\WISALK~1\AppData\Local\Temp/ipykernel_2680/3186084601.py in <module>
----> 1 food1.pop("tikki")
      2 food1

KeyError: 'tikki'
```

In [85]:
```
food2
```

Out[85]:
```
{'Apple': 25}
```

In [86]:
```
food3
```

Out[86]:
```
{'Dates': 50, 'Chpclate': 200, 'sawayyan': 1000}
```

In [87]:
```
food3.keys()
```

Out[87]:
```
dict_keys(['Dates', 'Chpclate', 'sawayyan'])
```

In [88]:
```
food3.values()
```

Out[88]:
```
dict_values([50, 200, 1000])
```

In [89]:
```
food3.get("Dates")
```

Out[89]:
```
50
```

In [90]:
```
food3.fromkeys("keys",12)
```

Out[90]:
```
{'k': 12, 'e': 12, 'y': 12, 's': 12}
```

4-Set

-unordered and unindexed

-curly braces are used { }

-No duplicates allowed

In [91]:
```
s1={1,21,5.2,"Aammar","Codanics","Peshawar","apple",True}
s1
```

Out[91]:
```
{1, 21, 5.2, 'Aammar', 'Codanics', 'Peshawar', 'apple'}
```

In [92]:
```
s1.add("Aammar1")
s1
```

Out[92]:
```
{1, 21, 5.2, 'Aammar', 'Aammar1', 'Codanics', 'Peshawar', 'apple'}
```

In [93]:
```
s1.remove("Aammar1")
s1
```

Out[93]:
```
{1, 21, 5.2, 'Aammar', 'Codanics', 'Peshawar', 'apple'}
```

In [94]:
```
s2={21,90,"apple","banana","Pakistan"}
s2
```

Out[94]:
```
{21, 90, 'Pakistan', 'apple', 'banana'}
```

In [95]:
```
s1.difference(s2)
```

Out[95]:
```
{1, 5.2, 'Aammar', 'Codanics', 'Peshawar'}
```

In [96]:
```
s2.difference(s1)
```

Out[96]:
```
{90, 'Pakistan', 'banana'}
```

In [97]:
```
s1.difference_update(s2)
```

In [98]:
```
s2.difference_update(s1)
```

In [99]:
```
s2
```

Out[99]:
```
{21, 90, 'Pakistan', 'apple', 'banana'}
```

In [100…
```
s3={24,34,44,54,64}
s3
```

Out[100…
```
{24, 34, 44, 54, 64}
```

In [101…
```
s4={14,24,34,74,84,94}
s4
```

Out[101…
```
{14, 24, 34, 74, 84, 94}
```

In [102…
```
s3.difference_update(s4)
s3
```
Out[102… {44, 54, 64}

In [103…
```
s4.difference_update(s3)
s4
```
Out[103… {14, 24, 34, 74, 84, 94}

In [104…
```
min(s4)
```
Out[104… 14

In [105…
```
max(s4)
```
Out[105… 94

In [106…
```
s4.discard(24)
s4
```
Out[106… {14, 34, 74, 84, 94}

In [107…
```
s4.intersection(s3)
```
Out[107… set()

In [108…
```
s3.add(14)
s3
```
Out[108… {14, 44, 54, 64}

In [109…
```
s3.add(34)
s3
```
Out[109… {14, 34, 44, 54, 64}

In [110…
```
s3.add(24)
s3
```
Out[110… {14, 24, 34, 44, 54, 64}

In [111…
```
s4.intersection(s3)
```
Out[111… {14, 34}

In [112…
```
s4
```
Out[112…
```
{14, 34, 74, 84, 94}
```

In [113…
```
s3
```
Out[113…
```
{14, 24, 34, 44, 54, 64}
```

In [114…
```
s3.isdisjoint(s4)
```
Out[114…
```
False
```

In [115…
```
s2.isdisjoint(s3)
```
Out[115…
```
True
```

In [116…
```
s3.issubset(s4)
```
Out[116…
```
False
```

In [117…
```
s3.issuperset(s4)
```
Out[117…
```
False
```

In [118…
```
s3
```
Out[118…
```
{14, 24, 34, 44, 54, 64}
```

In [119…
```
s3.pop()
```
Out[119…
```
64
```

In [120…
```
s3
```
Out[120…
```
{14, 24, 34, 44, 54}
```

In [121…
```
s5={"wisal","Hamza","salman","Aammar",2,4,6}
```

In [122…
```
s5
```
Out[122…
```
{2, 4, 6, 'Aammar', 'Hamza', 'salman', 'wisal'}
```

In [127…
```
s5.pop()
```

Out[127…
```
2
```

In [128…
```
s5.pop()
```

Out[128…
```
4
```

In [129…
```
s5
```

Out[129…
```
{6, 'Aammar', 'Hamza', 'salman', 'wisal'}
```

In [133…
```
s5.union(s3)
```

Out[133…
```
{14, 24, 34, 44, 54, 6, 'Aammar', 'Hamza', 'salman', 'wisal'}
```

In [ ]:
```

```