-Indexing

In [1]:
```
#   make a string
a="Dal and Chawal"
a
```

Out[1]:
```
'Dal and Chawal'
```

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

Out[2]:
```
'Dal and Chawal'
```

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

Out[3]:
```
'D'
```

In [4]:
```
a[2]
```

Out[4]:
```
'l'
```

In [5]:
```
# length of indexing
len(a)
```

Out[5]:
```
14
```

In [6]:
```
a[0:3]
```

Out[6]:
```
'Dal'
```

In [7]:
```
a[0:14]
```

Out[7]:
```
'Dal and Chawal'
```

In [8]:
```
a[-3]
```

Out[8]:
```
'w'
```

In [9]:
```
a[-6:14]
```

Out[9]:
```
'Chawal'
```

In [10]:
```
food="bryani"
food
```

Out[10]: 'bryani'

string methods

In [11]:
```
food
```

Out[11]: 'bryani'

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

Out[12]: 6

In [13]:
```
#Capitilize element
food.capitalize()
```

Out[13]: 'Bryani'

In [14]:
```
#Upper case
food.upper()
```

Out[14]: 'BRYANI'

In [15]:
```
#Lower case
food.lower()
```

Out[15]: 'bryani'

In [16]:
```
#Replace word
food.replace("bryani","Pasta")
```

Out[16]: 'Pasta'

In [17]:
```
#Counting a specific alphabet in a string
name="Yasir Mehmood Department of Electronics Quaid i Azam University Islamabad"
name
```

Out[17]: 'Yasir Mehmood Department of Electronics Quaid i Azam University Islamabad'

In [18]:
```
name.count("c")
```

Out[18]: 2

- finding an index number in a string

In [19]:
```
#Counting a specific alphabet in a string
name="Yasir Mehmood Department of Electronics Quaid i Azam University Islamabad"
name
```

Out[19]:
```
'Yasir Mehmood Department of Electronics Quaid i Azam University Islamabad'
```

In [20]:
```
name.find("d")
```

Out[20]:
```
12
```

In [21]:
```
### - How to split a string
food="I Love Chicken Bryani, Pizza,Samosa Chat and Chicken Karahi"
food
```

Out[21]:
```
'I Love Chicken Bryani, Pizza,Samosa Chat and Chicken Karahi'
```

In [22]:
```
food.split(",")
```

Out[22]:
```
['I Love Chicken Bryani', ' Pizza', 'Samosa Chat and Chicken Karahi']
```

Basic Data Structure in Python

1- Tuple 2- List 3- Dictinaries 4- Set

1- Tuple

- ordered collection of elements.
- enclosed in () round braces.
- Different kinds of elements store can be stored.
- once elements are stored you can not changed them (unmutatable).

In [23]:
```
tup1=(1, "python", True, 2.5)
tup1
```

Out[23]:
```
(1, 'python', True, 2.5)
```

In [24]:
```
#type of tuple
type(tup1)
```

Out[24]:
```
tuple
```

- Indexing in Tuple

In [25]:
```
tup1[0]
```

Out[25]:
```
1
```

In [26]:
```
tup1[1]
```

Out[26]:
```
'python'
```

In [27]:
```
tup1[2]
```

Out[27]:
```
True
```

In [28]:
```
tup1[3]
```

Out[28]:
```
2.5
```

In [29]:
```
#Last element is exclusive
tup1[0:4]
```

Out[29]:
```
(1, 'python', True, 2.5)
```

In [30]:
```
#count of elements in tuple
len(tup1)
```

Out[30]:
```
4
```

In [31]:
```
tup2=(4,"Yasir Mehmood", True, 1.9)
tup2
```

Out[31]:
```
(4, 'Yasir Mehmood', True, 1.9)
```

In [32]:
```
#concatinate
tup1 + tup2
```

Out[32]:
```
(1, 'python', True, 2.5, 4, 'Yasir Mehmood', True, 1.9)
```

In [33]:
```
#concatinate + repeat
tup1*3 + tup2
```

Out[33]:
```
(1,
 'python',
 True,
 2.5,
 1,
 'python',
 True,
 2.5,
 1,
 'python',
 True,
 2.5,
 4,
 'Yasir Mehmood',
 True,
 1.9)
```

In [34]:
```
tup3=(10,20,30,40,50,60,70,80,90)
tup3
```

Out[34]:
```
(10, 20, 30, 40, 50, 60, 70, 80, 90)
```

In [35]:
```
#minimum
min(tup3)
```

Out[35]:
```
10
```

In [36]:
```
#maximum
max(tup3)
```

Out[36]:
```
90
```

In [37]:
```
tup3*2
```

Out[37]:
```
(10, 20, 30, 40, 50, 60, 70, 80, 90, 10, 20, 30, 40, 50, 60, 70, 80, 90)
```

2- Lists

- Ordered collection of elements.
- enclosed in square [] brackets.
- Muteable, you can change the values.

In [38]:
```
list1=[2, "Yasir Mehmood", False]
list1
```

Out[38]:
```
[2, 'Yasir Mehmood', False]
```

In [39]:
```
type(list1)
```

Out[39]:
```
list
```

In [40]:
```
len(list1)
```

Out[40]:
```
3
```

In [41]:
```
list1[1]
```

Out[41]:
```
'Yasir Mehmood'
```

In [42]:
```
list2=[1, 3, "Yasir", "Mehmood", 786, 10.2, False]
list2
```

Out[42]:
```
[1, 3, 'Yasir', 'Mehmood', 786, 10.2, False]
```

In [43]:
```
list1+list2
```

Out[43]:
```
[2, 'Yasir Mehmood', False, 1, 3, 'Yasir', 'Mehmood', 786, 10.2, False]
```

In [44]:
```
list1*3
```

Out[44]:
```
[2,
 'Yasir Mehmood',
 False,
 2,
 'Yasir Mehmood',
 False,
 2,
 'Yasir Mehmood',
 False]
```

In [45]:
```
list1
```

Out[45]:
```
[2, 'Yasir Mehmood', False]
```

In [46]:
```
list1.reverse()
list1
```

Out[46]:
```
[False, 'Yasir Mehmood', 2]
```

In [47]:
```
#List count function
list1.count(2)
```

Out[47]:
```
1
```

In [48]:
```
list3=[10,50,20,25,15,35,40,45,16,55,60,65,85,75,70,95,90]
list3
```

Out[48]:
```
[10, 50, 20, 25, 15, 35, 40, 45, 16, 55, 60, 65, 85, 75, 70, 95, 90]
```

In [49]:
```
len(list3)
```

Out[49]:
```
17
```

In [50]:
```
#sorting a list
list3.sort()
list3
```

Out[50]:
```
[10, 15, 16, 20, 25, 35, 40, 45, 50, 55, 60, 65, 70, 75, 85, 90, 95]
```

In [51]:
```
list3*2
```

Out[51]:
```
[10,
 15,
 16,
 20,
 25,
 35,
 40,
 45,
 50,
 55,
 60,
 65,
 70,
 75,
 85,
 90,
 95,
 10,
 15,
 16,
 20,
 25,
 35,
 40,
 45,
 50,
 55,
 60,
 65,
 70,
 75,
 85,
 90,
 95]
```

In [52]:
```
lists=list1+list3
lists
```

Out[52]:
```
[False,
 'Yasir Mehmood',
 2,
 10,
 15,
 16,
 20,
 25,
 35,
 40,
 45,
 50,
 55,
 60,
 65,
 70,
 75,
 85,
 90,
 95]
```

3- Dictionaries

- An unordered collection of elements.
- Key and Value
- Curly Braces or Brackets {}
- Muteable/Change the values

In [53]:
```
#Food and their prices
a1={"Bryani":150, "Raita":30, "Salad":50, "Chana Chat":80, "Pakora":60, "Dates":70}
a1
```

Out[53]:
```
{'Bryani': 150,
 'Raita': 30,
 'Salad': 50,
 'Chana Chat': 80,
 'Pakora': 60,
 'Dates': 70}
```

In [54]:
```
type(a1)
```

Out[54]:
```
dict
```

In [55]:
```
#Extract Data
Keys1=a1.keys()
Keys1
```

Out[55]:
```
dict_keys(['Bryani', 'Raita', 'Salad', 'Chana Chat', 'Pakora', 'Dates'])
```

In [56]:
```
Values1=a1.values()
Values1
```

Out[56]:
```
dict_values([150, 30, 50, 80, 60, 70])
```

In [57]:
```
#Adding new element
a1["Samosa"]=20
a1
```

Out[57]:
```
{'Bryani': 150,
 'Raita': 30,
 'Salad': 50,
 'Chana Chat': 80,
 'Pakora': 60,
 'Dates': 70,
 'Samosa': 20}
```

In [58]:
```
# Update the values
a1["Samosa"]=15
a1
```

Out[58]:
```
{'Bryani': 150,
 'Raita': 30,
 'Salad': 50,
```

```
 'Chana Chat': 80,
 'Pakora': 60,
 'Dates': 70,
 'Samosa': 15}
```

In [59]:
```
a2={"Grapes":200, "Mangoes":150, "Watermelon":100, "Apples":120, "Bannana":80}
a2
```

Out[59]:
```
{'Grapes': 200,
 'Mangoes': 150,
 'Watermelon': 100,
 'Apples': 120,
 'Bannana': 80}
```

In [60]:
```
#concatinate
a1.update(a2)
a1
```

Out[60]:
```
{'Bryani': 150,
 'Raita': 30,
 'Salad': 50,
 'Chana Chat': 80,
 'Pakora': 60,
 'Dates': 70,
 'Samosa': 15,
 'Grapes': 200,
 'Mangoes': 150,
 'Watermelon': 100,
 'Apples': 120,
 'Bannana': 80}
```

4- Sets

- Unordered and unindexed.
- Curly Braces are Used.
- No duplicates are allowed

In [61]:
```
b1={3, 4.5, 7.2, "Yasir", "Mehmood", "Islamabad", True}
b1
```

Out[61]:
```
{3, 4.5, 7.2, 'Islamabad', 'Mehmood', True, 'Yasir'}
```

In [62]:
```
b1.add("Electronics")
b1
```

Out[62]:
```
{3, 4.5, 7.2, 'Electronics', 'Islamabad', 'Mehmood', True, 'Yasir'}
```

In [63]:
```
b1.remove("Electronics")
b1
```

Out[63]:
```
{3, 4.5, 7.2, 'Islamabad', 'Mehmood', True, 'Yasir'}
```

In [64]:

```
b1.clear()
b1
```

Out[64]:
```
set()
```

In [65]:
```
b2={3, 4.5, 7.2, "Yasir", "Mehmood", "Islamabad", True}
b3=b2.copy()
b3
```

Out[65]:
```
{3, 4.5, 7.2, 'Islamabad', 'Mehmood', True, 'Yasir'}
```

In [ ]:
```

```