Tuples

```
Create

Access

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Operations

Functions

```

List

Operator

In [2]:
```
#Arithmatic : + & *

L1 = [1,2,3]
L2 = [4,5,6]

print("Arithmatic plus(+):", L1 + L2)
print("Arithmatic Multi(*):", L1 * 3)
```

```
Arithmatic plus(+): [1, 2, 3, 4, 5, 6]
Arithmatic Multi(*): [1, 2, 3, 1, 2, 3, 1, 2, 3]
```

In [3]:
```
#Relational : <,>,==,!=,<=,>=

L1 = [1,2,3]  ##This is list
L2 = [4,5,6]
print(L1 > L2)
print(L1==L2)
print(L2 < L1)
print(L1 <= L2)
print(L1 >= L2)
```

```
False
False
False
True
False
```

In [4]:
```
#Membership : in  & not in
L1 = [25,18,17,29,20,26,24]

print(18 in L1)
print("18" in L1)
print(21 not in L1)
print(26 in L1)
```

```
True
False
True
True
```

Functions In List

In [5]:
```
#min/max/len/sorted

L1 = [17,28,50,26,29,56,34,33,20,19,67,25]

print("Max age in List:",max(L1))
print("Min age in List:",min(L1))
print("Number of ages in List:",len(L1))
print("Ascending Order:",sorted(L1))
print("Descending Order:",sorted(L1,reverse = True))
```

```
Max age in List: 67
Min age in List: 17
Number of ages in List: 12
Ascending Order: [17, 19, 20, 25, 26, 28, 29, 33, 34, 50, 56, 67]
Descending Order: [67, 56, 50, 34, 33, 29, 28, 26, 25, 20, 19, 17]
```

Tuples

Create

In [8]:
```
L1 = [1,2,3]
T1 = (1,2,3,4)

print("DataType of L1:",type(L1))
print("DataType of T1:",type(T1))
print()

#Empty Tuple
T2 = ()
print("This is Empty Tuple :",T2)

#Homogeneous Tuple
T3 = (28,12,29,15)
print("Homogenous Tuple :",T3)

#Heterogeneous Tuple
T4 = ("Trupti",21,"Pune",25.2)
print("Heterogeneous tuple:",T4)

#Multi Dimentional Tuple
T5 = (1,2,3,(4,5))
print("Multi D :", T5)

```

```
DataType of L1: <class 'list'>
DataType of T1: <class 'tuple'>

This is Empty Tuple : ()
Homogenous Tuple : (28, 12, 29, 15)
Heterogeneous tuple: ('Trupti', 21, 'Pune', 25.2)
Multi D : (1, 2, 3, (4, 5))
```

Access

In [9]:
```
T3 = (28,12,29,15)

print("29 using positive index:",T3[2])
print("29 using Negative index:",T3[-2])
```

```
29 using positive index: 29
29 using Negative index: 29
```

In [10]:
```
T4 = ("Trupti",21,"Pune",25.2)
print(T4[1:3])
```

```
(21, 'Pune')
```

In [12]:
```
#Multi-D Tuple:

T5 = (1,2,3,(4,5))
print(T5[3]) #Accesing inner tuple
print(T5[3][0]) #Accesing 1st Element of inner Tuple
```

```
(4, 5)
4
```

Edit / Add / Delete

In [13]:
```
#Diff between List And Tuple
#List is a Mutable class
#Tuple is Immutable class

L1 = [20,23,24,27] #This is List
L1[2] = 50  #Replacing 2nd index element 24 to 50
print(L1)

L1 =(20,23,24,2) #This is Tuple
L1[2] = 20 #'tuple' object does not support item assignment

print(L1)

```

```
[20, 23, 50, 27]

---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[13], line 10
      7 print(L1)
      9 L1 =(20,23,24,2) #This is Tuple
---> 10 L1[2] = 20
     11 print(L1)

TypeError: 'tuple' object does not support item assignment
```

In [14]:
```
L1 = (20,23,24,27)
L1.append(29) #'tuple' object has no attribute 'append'
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[14], line 2
      1 L1 = (20,23,24,27)
----> 2 L1.append(29)

AttributeError: 'tuple' object has no attribute 'append'
```

Operations / Functions In Tuple

In [15]:
```
T1 = (1,2,3)
T2 =(4,5,6)

print(T1 + T2)
print(T1 * 3)

T3 =("Trupti","Neha","Nilima")
T4 =("Sagar","Pratik","Priya")
print(T3 + T2)
print(T3 * 2)
print(T4 * 2)
```

```
(1, 2, 3, 4, 5, 6)
(1, 2, 3, 1, 2, 3, 1, 2, 3)
('Trupti', 'Neha', 'Nilima', 4, 5, 6)
('Trupti', 'Neha', 'Nilima', 'Trupti', 'Neha', 'Nilima')
('Sagar', 'Pratik', 'Priya', 'Sagar', 'Pratik', 'Priya')
```

In [16]:
```
print(T1>T2)
print(T1==T2)
```

```
False
False
```

In [17]:
```
print(28 in T2)
print(1 in T1)
```

```
False
True
```

In [18]:
```
#functions : min / max / len / sorted

T1 = (17,28,50,26,29,56,34,33,20,19,67,25)
print("Max age in Tuple:",max(L1))
print("Min age in Tuple:",min(L1))
print("Number of ages in Tuple:",len(L1))
print("Ascending Order:",sorted(L1))
print("Descending Order:",sorted(L1,reverse = True))
```

```
Max age in Tuple: 27
Min age in Tuple: 20
Number of ages in Tuple: 4
Ascending Order: [20, 23, 24, 27]
Descending Order: [27, 24, 23, 20]
```

In [ ]:
```

```