In [1]:

```
#Tuple:
# Tuple is exactly same as list except it is immutable. once we creates Tuple object, we cannot perform any chang
es in
# that object. Hence tuple is read only version of list.
# 1. If our data is fixed and never changes then we should go for tuple.
# 2. Insertion order is preserved.
# 3. Duplicates are allowed.
# 4. Heterogenou objects are allowed.
# 5. Tuple supports both +ve index and -ve index. +ve index means to light to right direction. -ve index means ri
ght to left
# 6. We can represent Tuple elements with in paranthesis and with comma seperator.
```

In [2]:

```
#Tuple creation
t=(10,20,30)
print(t)
```

```
(10, 20, 30)
```

In [3]:

```
#Accessing elements of tuple - We can access either by index or by slice operator.
t=(10,20,30,40,50)
#By using index
print(t[0])
print(t[-1])
#By using slice operator
print(t[1:3])
print(t[::2])

#Note: once we creates a tuple we cannot change its content.
```

```
10
50
(20, 30)
(10, 30, 50)
```

In [5]:

```
# mathematical operations of tuple
# Concatenation Operator(+):
t1=(10,20,30)
t2=(40,50)
t3=t1+t2
print(t3)

#repetetion operator
t1=(10,20,30)
t2=t1*3
print(t2)
```

```
(10, 20, 30, 40, 50)
(10, 20, 30, 10, 20, 30, 10, 20, 30)
```

In [6]:

```
#important functions of tuple

#len() - to return no of elements present in tuple.
t=(10,30,20,50,40)
print(len(t))
# count() - to return no of occurrences of given element in the tuple.
print(t.count(10))
#index() - returns index of first occurrence of given element.
print(t.index(30))
#sorted() - to sort the elements based on default natural sorting order.
print(sorted(t))
#min() - this function returns the minimum value
print(min(t))
#max() - this function returns maximum value
print(max(t))
```

```
5
1
1
[10, 20, 30, 40, 50]
10
50
```

```python
#tuple packing and Unpacking
# We can create tuple by packing a group of variables.
#eg:
a=10
b=20
c=30
d=40
t=a,b,c,d
print(t)

#tuple unpacking is reverse process of tuple packing. We can unpack a tuple and assign its values to variables.
t=(10,20,30,40)
a,b,c,d=t
print("a=",a,"b=",b,"c=",c,"d=",d)
```

```
(10, 20, 30, 40)
a= 10 b= 20 c= 30 d= 40
```