

In [3]:

```
#Working With Numpy  
import numpy as np  
l1=[1,2,3,4]  
n1=np.array(l1)
```

In [4]:

```
n1
```

Out[4]:

```
array([1, 2, 3, 4])
```

In [5]:

```
type(n1)
```

Out[5]:

```
numpy.ndarray
```

In [9]:

```
#to pass list of list  
n2=np.array([[1,2,3,4,5],[6,7,8,9,10]])  
n2
```

Out[9]:

```
array([[ 1,  2,  3,  4,  5],  
       [ 6,  7,  8,  9, 10]])
```

In [10]:

```
type(n2)
```

Out[10]:

```
numpy.ndarray
```

In [11]:

```
#Initializing numpy arrays with zeros  
n1=np.zeros((2,4))  
n1
```

Out[11]:

```
array([[0., 0., 0., 0.],  
       [0., 0., 0., 0.]])
```

In [12]:

```
n1=np.zeros((10,10))  
n1
```

Out[12]:

```
array([[0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.]])
```

In [13]:

```
#Initializing numpy array with same number  
n1=np.full((3,3),10)  
n1
```

Out[13]:

```
array([[10, 10, 10],  
       [10, 10, 10],  
       [10, 10, 10]])
```

In [15]:

```
#initializing numpy array within a range  
n1=np.arange(10,20)  
n1
```

Out[15]:

```
array([10, 11, 12, 13, 14, 15, 16, 17, 18, 19])
```

In [16]:

```
#Same thing with a gap of 5  
n1=np.arange(10,50,5)  
n1
```

Out[16]:

```
array([10, 15, 20, 25, 30, 35, 40, 45])
```

In [18]:

```
#Initializing Numpy with random numbers  
n1=np.random.randint(1,100,10)  
n1
```

Out[18]:

```
array([14, 64, 62, 40, 97, 79, 92, 93, 53, 74])
```

In [24]:

```
#Checking the shape of numpy arrays  
n1=np.array([[1,2,3,4],[4,5,6,7]])  
n1
```

Out[24]:

```
array([[1, 2, 3, 4],  
       [4, 5, 6, 7]])
```

In [25]:

```
n1.shape
```

Out[25]:

```
(2, 4)
```

In [27]:

```
#To change the shape  
n1.shape=(4,2)  
n1
```

Out[27]:

```
array([[1, 2],  
       [3, 4],  
       [4, 5],  
       [6, 7]])
```

In [28]:

```
n1.shape=(8,1)  
n1
```

Out[28]:

```
array([[1],  
       [2],  
       [3],  
       [4],  
       [4],  
       [5],  
       [6],  
       [7]])
```

In [29]:

```
#Joining numpy arrays in 3 different ways 1.vstack() 2.hstack() 3.column_stack()
n1=np.array([10,20,30,40])
n2=np.array([50,60,70,80])
#vertical stack
np.vstack((n1,n2))
```

Out[29]:

```
array([[10, 20, 30, 40],
       [50, 60, 70, 80]])
```

In [31]:

```
#Horizontal stack
np.hstack((n1,n2))
```

Out[31]:

```
array([10, 20, 30, 40, 50, 60, 70, 80])
```

In [32]:

```
np.column_stack((n1,n2))
```

Out[32]:

```
array([[10, 50],
       [20, 60],
       [30, 70],
       [40, 80]])
```

In [34]:

```
#numpy intersection and difference
n1=np.array([10,20,30,40,50,60])
n2=np.array([70,80,90,50,110,120])
np.intersect1d(n1,n2)
```

Out[34]:

```
array([50])
```

In [35]:

```
n1=np.array([10,20,30,40,50,60])
n2=np.array([70,80,90,50,110,120])
np.setdiff1d(n1,n2)
```

Out[35]:

```
array([10, 20, 30, 40, 60])
```

In [36]:

```
n1=np.array([10,20,30,40,50,60])
n2=np.array([70,80,90,50,110,120])
np.setdiff1d(n2,n1)
```

Out[36]:

```
array([ 70,  80,  90, 110, 120])
```

In [38]:

```
#Addition of numpy arrays
n1=np.array([10,20])
n2=np.array([30,40])
np.sum([n1,n2])
```

Out[38]:

```
100
```

In [40]:

```
np.sum([n1,n2],axis=0)
```

Out[40]:

```
array([40, 60])
```

In [41]:

```
np.sum([n1,n2],axis=1)
```

Out[41]:

```
array([30, 70])
```

In [42]:

```
#Basic Scalar operations  
n1=np.array([10,20,30])  
n1=n1+1  
n1
```

Out[42]:

```
array([11, 21, 31])
```

In [43]:

```
n2*2
```

Out[43]:

```
array([60, 80])
```

In [44]:

```
#mean,median,standard deviation  
np.mean(n1)
```

Out[44]:

```
21.0
```

In [45]:

```
np.median(n1)
```

Out[45]:

```
21.0
```

In [50]:

```
np.std(n1)
```

Out[50]:

```
17.07825127659933
```

In [51]:

```
n1
```

Out[51]:

```
array([10, 20, 30, 40, 50, 60])
```

In [52]:

```
np.save('my_numpy',n1)
```

In [58]:

```
n1_new=np.load('my_numpy.npy')  
n1_new
```

Out[58]:

```
array([10, 20, 30, 40, 50, 60])
```

In [48]:

```
#saving numpy  
n1=np.array([10,20,30,40,50,60])  
np.save('my_numpy',n1)
```

In [49]:

```
#Loading numpy array  
n2=np.load('my_numpy.npy')  
n2
```

Out[49]:

```
array([10, 20, 30, 40, 50, 60])
```

In [ ]:

In [ ]: