

In [38]:

```
# NumPy for array

#Numpy stands for Numerical Python. It is a core library for numeric and scientific com
```

In [2]:

```
import numpy as np
n1 = np.array([10,20,30])
n2 = np.array([40,50,60])
```

In [3]:

```
n1
```

Out[3]:

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

In [4]:

```
n2
```

Out[4]:

```
array([40, 50, 60])
```

In [5]:

```
print(n1)
```

```
[10 20 30]
```

In [6]:

```
print(n2)
```

```
[40 50 60]
```

In [ ]:

In [7]:

```
# Initializing NumPy array with zeroes
```

In [8]:

```
a1 = np.zeros((1,2))
a1
```

Out[8]:

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

In [9]:

```
type(a1)
```

Out[9]:

numpy.ndarray

In [10]:

```
aa = np.zeros((3,3))
```

In [11]:

```
aa
```

Out[11]:

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

In [12]:

```
type(aa)
```

Out[12]:

numpy.ndarray

In [ ]:

In [13]:

```
# Initializing NumPy with same number
```

In [14]:

```
a2 = np.full((6,2),22) # full(row,column,parameter)
```

In [15]:

```
a2
```

Out[15]:

```
array([[22, 22],
       [22, 22],
       [22, 22],
       [22, 22],
       [22, 22],
       [22, 22]])
```

In [ ]:

In [16]:

```
# Initializing NumPy within a range
```

In [17]:

```
n3 = np.arange(9)
n3
```

Out[17]:

```
array([0, 1, 2, 3, 4, 5, 6, 7, 8])
```

In [18]:

```
n4 = np.arange(3,16)
print(n4)
```

```
[ 3  4  5  6  7  8  9 10 11 12 13 14 15]
```

In [19]:

```
n5 = np.arange(1,60,5)      #arange(lb,exclusive_ub,skip parameter)
n5
```

Out[19]:

```
array([ 1,  6, 11, 16, 21, 26, 31, 36, 41, 46, 51, 56])
```

In [ ]:

In [20]:

```
# NumPy array with RANDOM NUMBERS
```

In [21]:

```
ra1 = np.random.randint(1,100,5)
ra1
```

Out[21]:

```
array([38, 33, 46, 78, 60])
```

In [ ]:

In [22]:

```
# NumPy array to check SHAPE
```

In [23]:

```
s1 = np.array([[1,2,5],[3,6,7]])  
s1
```

Out[23]:

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

In [24]:

```
print(s1.shape)           #shape tells the dimension(no_of_row,no_of_column) of given array  
  
(2, 3)
```

In [25]:

```
s1.shape = (3,2)  
s1
```

Out[25]:

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

In [ ]:

In [26]:

```
# NumPy array MATHEMATICS
```

In [27]:

```
# SUM  
s2 = np.array([10,11,13])  
s3 = np.array([15,66,48])
```

In [28]:

```
s2
```

Out[28]:

```
array([10, 11, 13])
```

In [29]:

```
s3
```

Out[29]:

```
array([15, 66, 48])
```

In [30]:

```
np.sum([s2,s3])
```

Out[30]:

163

In [31]:

```
np.sum([s2,s3],axis = 0) #SUM with AXIS = 0 (VERTICAL ADDITION)
```

Out[31]:

array([25, 77, 61])

In [32]:

```
np.sum([s2,s3],axis = 1) #SUM with AXIS = 1 (HORIZONTAL ADDITION)
```

Out[32]:

array([ 34, 129])

In [ ]:

In [33]:

```
# JOINING NumPy array
```

In [34]:

```
ab = np.array([11,12,13,14])  
ac = np.array([15,16,17,18])
```

In [35]:

```
np.vstack([ab,ac])
```

Out[35]:

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

In [36]:

```
np.hstack([ab,ac])
```

Out[36]:

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

In [37]:

```
np.column_stack([ab,ac])
```

Out[37]:

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

In [ ]: