In [10]:
```
# NUmpy = Numerical python
## It is use for scientific calculations

import numpy as np
a1 = np.array([1,5,3,5])
print(type(a1))
print(a1)
```

```
<class 'numpy.ndarray'>
[1 5 3 5]
```

In [16]:
```
a2 = np.array([[5,3,42,53,5],[34,45,2,5,15]])
```

In [20]:
```
a2
```

Out[20]:
```
array([[ 5,  3, 42, 53,  5],
       [34, 45,  2,  5, 15]])
```

In [23]:
```
a3 = np.zeros((4,4))
```

In [24]:
```
a3
```

Out[24]:
```
array([[0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.]])
```

In [25]:
```
a4 = np.full((3,5),(555))
```

In [26]:
```
a4
```

Out[26]:
```
array([[555, 555, 555, 555, 555],
       [555, 555, 555, 555, 555],
       [555, 555, 555, 555, 555]])
```

In [34]:
```
a5 = np.arange(10,100,2)   # to print specific range in array
```

In [35]:
```
a5
```

Out[35]:
```
array([10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42,
       44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76,
       78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98])
```

In [64]:
```
a6 = np.random.randint(1,100,50)    # make array with random number from range(1
```

In [65]:
```
a6
```

Out[65]:
```
array([90, 36, 26, 77, 60,  9, 19, 94, 95, 17, 36, 67, 70, 15,  8, 72, 21,
       33, 55, 47,  2, 69, 50, 24, 43, 58,  7, 51, 71, 38, 67, 62, 62, 15,
       42,  4,  9,  9, 19, 31, 25, 74, 84, 15, 18, 69, 53, 15, 16, 65])
```

In [72]:
```
a2.shape   # shows the shape of array (e.g : 2 row, 5 cols)
```

Out[72]: (2, 5)

In [77]:
```
a6.shape
```

Out[77]: (50,)

In [80]:
```
a6.shape = (1,50)    # reshaped a6 from (50,1) to (1,50)
```

In [82]:
```
a6.shape
```

Out[82]: (1, 50)

In [83]:
```
a6
```

Out[83]:
```
array([[90, 36, 26, 77, 60,  9, 19, 94, 95, 17, 36, 67, 70, 15,  8, 72,
        21, 33, 55, 47,  2, 69, 50, 24, 43, 58,  7, 51, 71, 38, 67, 62,
        62, 15, 42,  4,  9,  9, 19, 31, 25, 74, 84, 15, 18, 69, 53, 15,
        16, 65]])
```

In [86]:
```
n1 = np.array([1,4,5,2])
n2 = np.array([5,74,35,12])
```

In [88]:
```
np.vstack((n1,n2))           #  join Two or more arrays of same dimentions
                            # 3 types of stack
                            # Vstack = vertical stack
                            # hstack = horizontal stack
                            # cstack = column stack
```

Out[88]:
```
array([[ 1,  4,  5,  2],
       [ 5, 74, 35, 12]])
```

In [89]:
```
np.intersect1d(n1,n2)   # for intersection
```

Out[89]: array([5])

In [91]:
```
np.union1d(n1,n2)       # union of two array
```

Out[91]: array([1, 2, 4, 5, 12, 35, 74])

In [93]:
```
np.setdiff1d(n1,n2)     # difference btw two array
```

Out[93]: array([1, 2, 4])

In [96]:
```
np.add(n1,n2)            # add to array of same dimention
```

Out[96]: array([6, 78, 40, 14])

In [98]:
```
np.sum([n1,n2])          # sum all elements of two array
```

Out[98]:
```
138
```

In [99]:
```
np.sum([n1,n2],axis = 1)       # Horizontal sum
```

Out[99]:
```
array([ 12, 126])
```

In [100]:
```
np.sum([n1,n2],axis = 0)      # Vertical sum
```

Out[100]:
```
array([ 6, 78, 40, 14])
```

In [102]:
```
s1 = np.array([1,5,6,8,9,2])       # saving array
np.save("MyArr",s1)
```

In [103]:
```

np.load("Myarr.npy")                  # loading array
```

Out[103]:
```
array([1, 5, 6, 8, 9, 2])
```

In [ ]:
```

```