

In [1]:

```
### 2D ARRAY
```

In [2]:

```
import numpy as np
```

In [3]:

```
a=np.array([[1,2,3],[4,5,6]])  
a
```

Out[3]:

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

In [4]:

```
a.shape
```

Out[4]:

```
(2, 3)
```

In [5]:

```
len(a)
```

Out[5]:

```
2
```

In [6]:

```
a.ndim
```

Out[6]:

```
2
```

In [7]:

```
a.size
```

Out[7]:

```
6
```

In [8]:

```
a.dtype
```

Out[8]:

```
dtype('int32')
```

In [10]:

```
a1=np.zeros(5)
a1
```

Out[10]:

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

In [12]:

```
a2=np.ones(5)
a2
```

Out[12]:

```
array([1., 1., 1., 1., 1.])
```

In [13]:

```
a3=np.arange(10,30,5)
a3
```

Out[13]:

```
array([10, 15, 20, 25])
```

In [14]:

```
a4=np.linspace(0,10,8)
a4
```

Out[14]:

```
array([ 0.          ,  1.42857143,  2.85714286,  4.28571429,  5.71428571,
        7.14285714,  8.57142857, 10.          ])
```

In [15]:

```
### ARTIMATIC OPERATIONS
```

In [16]:

```
#ADDITION
```

In [19]:

```
a=np.array([[1,2,3],[4,5,6]])
b=np.array([[7,8,9],[10,11,12]])
a+b
```

Out[19]:

```
array([[ 8, 10, 12],
       [14, 16, 18]])
```

In [18]:

```
#subtraction
```

In [20]:

```
a=np.array([[1,2,3],[4,5,6]])  
b=np.array([[7,8,9],[10,11,12]])  
a-b
```

Out[20]:

```
array([[ -6,  -6,  -6],  
       [ -6,  -6,  -6]])
```

In []:

```
#multiplication
```

In [21]:

```
a=np.array([[1,2,3],[4,5,6]])  
b=np.array([[7,8,9],[10,11,12]])  
a*b
```

Out[21]:

```
array([[ 7, 16, 27],  
       [40, 55, 72]])
```

In []:

```
#division
```

In [22]:

```
a=np.array([[1,2,3],[4,5,6]])  
b=np.array([[7,8,9],[10,11,12]])  
a/b
```

Out[22]:

```
array([[0.14285714, 0.25      , 0.33333333],  
       [0.4       , 0.45454545, 0.5       ]])
```

In [23]:

```
#exponent
```

In [24]:

```
np.exp(b)
```

Out[24]:

```
array([[ 1096.63315843,  2980.95798704,  8103.08392758],  
       [22026.46579481,  59874.1417152 , 162754.791419  ]])
```

In [25]:

```
# square root
```

In [26]:

```
np.sqrt(b)
```

Out[26]:

```
array([[2.64575131, 2.82842712, 3.          ],
       [3.16227766, 3.31662479, 3.46410162]])
```

In [27]:

```
# comparision
```

In [28]:

```
a==b
```

Out[28]:

```
array([[False, False, False],
       [False, False, False]])
```

In [29]:

```
a>2
```

Out[29]:

```
array([[False, False,  True],
       [ True,  True,  True]])
```

In [30]:

```
# aggregate function
```

In [31]:

```
a.sum()
```

Out[31]:

```
21
```

In [32]:

```
a.max()
```

Out[32]:

```
6
```

In [33]:

```
a.min()
```

Out[33]:

```
1
```

In [34]:

```
a.cumsum()
```

Out[34]:

```
array([ 1,  3,  6, 10, 15, 21])
```

In [35]:

```
# correlation
```

In [38]:

```
np.corrcoef(a,b)
```

Out[38]:

```
array([[1., 1., 1., 1.],
       [1., 1., 1., 1.],
       [1., 1., 1., 1.],
       [1., 1., 1., 1.]])
```

In [40]:

```
np.std(a)
```

Out[40]:

```
1.707825127659933
```

In []: