

In [1]:

```
pip install numpy
```

```
0:00:00 ----- 7.4/14.8 MB 942.7 kB/s eta
0:00:08 ----- 7.5/14.8 MB 942.8 kB/s eta
0:00:08 ----- 7.5/14.8 MB 941.9 kB/s eta
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0:00:08 ----- 7.7/14.8 MB 942.1 kB/s eta
0:00:08 ----- 7.7/14.8 MB 943.0 kB/s eta
0:00:08 ----- 7.8/14.8 MB 942.6 kB/s eta
0:00:08 ----- 7.8/14.8 MB 942.1 kB/s eta
^ ^ ^
```

In [2]:

```
import numpy as np
```

In [3]:

```
### 1D
```

In [4]:

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

Out[4]:

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

In [5]:

```
a.shape
```

Out[5]:

```
(3,)
```

In [6]:

```
len(a)
```

Out[6]:

```
3
```

In [8]:

```
a.ndim
```

Out[8]:

```
1
```

In [9]:

```
a.size
```

Out[9]:

```
3
```

In [10]:

```
a.dtype
```

Out[10]:

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

In [11]:

```
np.zeros(5)
```

Out[11]:

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

In [12]:

```
### create array of one
```

In [14]:

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

Out[14]:

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

In [17]:

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

Out[17]:

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

In [18]:

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

Out[18]:

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

In [19]:

```
### arithmetic operation
```

In [20]:

```
#multiplicaion
```

In [21]:

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

Out[21]:

```
array([ 4, 10, 18])
```

In [22]:

```
#subtraction
```

In [23]:

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

Out[23]:

```
array([-3, -3, -3])
```

In [24]:

```
#addition
```

In [25]:

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

Out[25]:

```
array([5, 7, 9])
```

In [26]:

```
#division
```

In [27]:

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

Out[27]:

```
array([0.25, 0.4 , 0.5 ])
```

In [28]:

```
# square root
```

In [29]:

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

Out[29]:

```
array([2.          , 2.23606798, 2.44948974])
```

In [30]:

```
# exponent
```

In [31]:

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

Out[31]:

```
array([ 54.59815003, 148.4131591 , 403.42879349])
```

In [32]:

```
#comparison
```

In [33]:

```
a==b
```

Out[33]:

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

In [34]:

```
a>3
```

Out[34]:

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

In [35]:

```
# aggregate function
```

In [36]:

```
a.sum()
```

Out[36]:

6

In [37]:

```
a.min()
```

Out[37]:

1

In [38]:

```
a.max()
```

Out[38]:

3

In [39]:

```
a.cumsum()
```

Out[39]:

```
array([1, 3, 6])
```

In [40]:

```
# correlation co=efficient
```

In [41]:

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

Out[41]:

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

In [42]:

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

Out[42]:

0.816496580927726

In []: