In [1]:
```python
pip install numpy
```

```
Collecting numpy
  Downloading numpy-1.24.3-cp311-cp311-win_amd64.whl (14.8 MB)
     ---------------------------------- 14.8/14.8 MB 458.3 kB/s eta 0:00:00
Installing collected packages: numpy
Successfully installed numpy-1.24.3
Note: you may need to restart the kernel to use updated packages.


[notice] A new release of pip available: 22.3.1 -> 23.1.2
[notice] To update, run: python.exe -m pip install --upgrade pip
```

In [2]:
```python
import numpy as np
```

In [4]:
```python
### 1D Array
```

In [5]:
```python
a=np.array([1,2,3])
a
```

Out[5]:
```
array([1, 2, 3])
```

In [6]:
```python
a.shape
```

Out[6]:
```
(3,)
```

In [7]:
```python
len(a)
```

Out[7]:
```
3
```

In [8]:
```python
a.ndim
```

Out[8]:
```
1
```

In [9]:
```python
a.size
```

Out[9]:
```
3
```

In [10]:
```python
a.dtype
```

Out[10]:
```
dtype('int32')
```

In [11]:
```python
np.zeros(5)
```

Out[11]:
```
array([0., 0., 0., 0., 0.])
```

In [12]:
```python
##Create an array of one
```

In [13]:
```python
a2=np.ones(5)
a2
```

Out[13]:
```
array([1., 1., 1., 1., 1.])
```

In [15]:
```python
a3=np.arange(10,30,5)
a3
```

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

In [16]:
```python
a4=np.linspace(0,10,8)
a4
```

Out[16]:
```
array([ 0.        ,  1.42857143,  2.85714286,  4.28571429,  5.71428571,
        7.14285714,  8.57142857, 10.        ])
```

In [18]: `##Arithematic Operation`

In [19]: `#Addition`

In [20]:
```python
a=np.array([1,2,3])
b=np.array([4,5,6])
a+b
```

Out[20]: `array([5, 7, 9])`

In [21]: `#Subtraction`

In [22]:
```python
a=np.array([1,2,3])
b=np.array([4,5,6])
a-b
```

Out[22]: `array([-3, -3, -3])`

In [23]: `#Multiplication`

In [24]:
```python
a=np.array([1,2,3])
b=np.array([4,5,6])
a*b
```

Out[24]: `array([ 4, 10, 18])`

In [25]: `#Division`

In [26]:
```python
a=np.array([1,2,3])
b=np.array([4,5,6])
a/b
```

Out[26]: `array([0.25, 0.4 , 0.5 ])`

In [27]: `#Exponent`

In [28]: `np.exp(b)`

Out[28]: `array([ 54.59815003, 148.4131591 , 403.42879349])`

In [29]: `#Square Root`

In [30]: `np.sqrt(b)`

Out[30]: `array([2.        , 2.23606798, 2.44948974])`

In [31]: `#Comparison`

In [32]: `a==b`

Out[32]: `array([False, False, False])`

In [33]: `a>2`

Out[33]: `array([False, False,  True])`

In [34]: `#Aggregate Function`

In [35]: `a.sum()`

Out[35]: `6`

In [36]: `a.min()`

Out[36]: `1`

```
In [38]: a.max()
```

Out[38]: 3

```
In [39]: a.cumsum()
```

Out[39]: array([1, 3, 6])

```
In [40]: a.mean()
```

Out[40]: 2.0

```
In [42]: #Correlation Co-efficient
```

```
In [43]: np.corrcoef(a,b)
```

Out[43]: array([[1., 1.],
               [1., 1.]])

```
In [44]: np.std(a)
```

Out[44]: 0.816496580927726

```
In [ ]:
```