In [1]:

```python
###2Array
```

In [3]:

```python
import numpy as np
```

In [4]:

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

Out[4]:

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

In [5]:

```python
a.shape
```

Out[5]:

```
(2, 3)
```

In [6]:

```python
len(a)
```

Out[6]:

```
2
```

In [7]:

```python
a.ndim
```

Out[7]:

```
2
```

In [8]:

```python
a.size
```

Out[8]:

```
6
```

In [9]:

```python
a.dtype
```

Out[9]:

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

In [10]:

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

Out[10]:

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

In [11]:

```python
#Create an Array of one
```

In [16]:

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

Out[16]:

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

In [18]:

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

Out[18]:

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

In [20]:

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

Out[20]:

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

In [21]:

```python
# Arithematic Operation
```

In [22]:

```python
#Addition
```

In [23]:

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

Out[23]:

```
array([[ 8, 10, 12],
       [13, 15, 17]])
```

In [24]:

```python
#Subtraction
```

In [25]:

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

Out[25]:

```
array([[-6, -6, -6],
       [-7, -7, -7]])
```

In [26]:

```python
#Multiplication
```

In [27]:

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

Out[27]:

```
array([[ 7, 16, 27],
       [30, 44, 60]])
```

In [28]:

```python
#Division
```

In [42]:

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

Out[42]:

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

In [30]:

```python
#Exponent
```

In [43]:

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

Out[43]:

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

In [34]:

```python
#Square Root
```

In [44]:

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

Out[44]:

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

In [35]:

```python
#Comparison
```

In [45]:

```python
a==b
```

Out[45]:

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

In [37]:

```python
a>2
```

Out[37]:

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

In [38]:

```python
#Aggregate Function
```

In [46]:

```python
a.sum()
```

Out[46]:

```
21
```

In [47]:

```python
a.min()
```

Out[47]:

```
1
```

In [48]:

```python
a.max()
```

Out[48]:

```
6
```

In [49]:

```python
a.cumsum()
```

Out[49]:

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

In [50]:

```python
a.mean()
```

Out[50]:

```
3.5
```

In [54]:

```python
#Correlation
```

In [55]:

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

Out[55]:

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

In [56]:

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

Out[56]:

```
1.707825127659933
```

In [ ]: