2D ARRAY

```
import numpy as np
a=np.array([[1,2,3,4,5],[6,7,8,9,10]])
a
```

```
array([[ 1,  2,  3,  4,  5],
       [ 6,  7,  8,  9, 10]])
```

```
a.shape
```

```
(2, 5)
```

```
len(a)
```

```
2
```

```
a.ndim
```

```
2
```

```
a.size
```

```
10
```

```
a.dtype
```

```
dtype('int64')
```

creating an array of zero

```
b=np.zeros(6)
b
```

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

creating an array of one

```
c=np.ones(6)
c
```

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

```
d=np.arange(10,20,2)
d
```

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

```
e=np.linspace(0,10,6)
e
```

```
array([ 0.,  2.,  4.,  6.,  8., 10.])
```

arthmetic operation

addition

```
a=np.array([[0,1,2,3],[4,5,6,7]])
a1=np.array([[8,9,10,11],[12,13,14,15]])
```

```
a+a1
```

```
array([[ 8, 10, 12, 14],
       [16, 18, 20, 22]])
```

subtraction

```
a-a1
```

```
array([[-8, -8, -8, -8],
       [-8, -8, -8, -8]])
```

multiplication

```
a*a1
```

```
array([[  0,   9,  20,  33],
       [ 48,  65,  84, 105]])
```

division

```
a/a1
```

```
array([[0.        , 0.11111111, 0.2       , 0.27272727],
       [0.33333333, 0.38461538, 0.42857143, 0.46666667]])
```

```
np.exp(a)
```

```
array([[1.00000000e+00, 2.71828183e+00, 7.38905610e+00, 2.00855369e+01],
       [5.45981500e+01, 1.48413159e+02, 4.03428793e+02, 1.09663316e+03]])
```

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

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

comparsion

```
a==a1
```

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

```
a>4
```

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

aggregate function

```
a.sum()
```

```
28
```

```
a.min()
```

```
0
```

```
a.max()
```

```
7
```

```
a.cumsum()
```

```
array([ 0,  1,  3,  6, 10, 15, 21, 28])
```

```
a.mean()
```

```
3.5
```

correlation function

```
np.corrcoef(a,a1)
```

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

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

```
2.29128784747792
```