In [65]:
```
import numpy as np
x = np.array([[7, 2, 3], [4, 5, 6],[7,8,9]], np.int32)
x
```

Out[65]:
```
array([[7, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

In [40]:
```
type(x)
```

Out[40]:
```
numpy.ndarray
```

In [41]:
```
x.shape
```

Out[41]:
```
(3, 3)
```

In [8]:
```
x.dtype
```

Out[8]:
```
dtype('int32')
```

In [47]:
```
x[2,2]
```

Out[47]:
```
9
```

In [56]:
```
y = np.ones((4, 3,4))
y.ndim
```

Out[56]:
```
3
```

In [57]:
```
y
```

Out[57]:
```
array([[[1., 1., 1., 1.],
        [1., 1., 1., 1.],
        [1., 1., 1., 1.]],

       [[1., 1., 1., 1.],
        [1., 1., 1., 1.],
        [1., 1., 1., 1.]],

       [[1., 1., 1., 1.],
        [1., 1., 1., 1.],
        [1., 1., 1., 1.]],

       [[1., 1., 1., 1.],
        [1., 1., 1., 1.],
        [1., 1., 1., 1.]]])
```

In [13]:
```
y = np.ones((2, 3, 4))
y
```

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

       [[1., 1., 1., 1.],
        [1., 1., 1., 1.],
        [1., 1., 1., 1.]]])
```

In [61]:
```
np.arange(3,9,3)
#arange(start,stop,stepsize)
```

Out[61]:
```
array([3, 6])
```

In [16]:
```
np.arange(3,7)
```

Out[16]:
```
array([3, 4, 5, 6])
```

In [62]:
```
np.amax(x)
```

Out[62]:
```
9
```

In [66]:
```
np.amin(x)
```

Out[66]:
```
2
```

In [20]:
```
z=np.arange(4)
z
```

Out[20]:
```
array([0, 1, 2, 3])
```

In [22]:
```
a = np.arange(4).reshape((2,2))
a
```

Out[22]:
```
array([[0, 1],
       [2, 3]])
```

In [23]:
```
np.amax(a)
```

Out[23]:
```
3
```

In [25]:
```
np.amin(a)
```

Out[25]:
```
0
```

In [28]:
```
a = np.array([[1, 2], [3, 4]])
b = np.array([[5, 6]])
np.concatenate((a, b), axis=0)
```

Out[28]:
```
array([[1, 2],
       [3, 4],
       [5, 6]])
```

In [30]:
```
np.concatenate((a, b.T), axis=1)
```

Out[30]:
```
array([[1, 2, 5],
       [3, 4, 6]])
```

In [31]:
```
np.concatenate((a, b), axis=None)
```

Out[31]:
```
array([1, 2, 3, 4, 5, 6])
```

In [72]:
```
x = np.array([[1.,2.],[3.,4.],[5.,6.]])
x
```

Out[72]:
```
array([[1., 2.],
       [3., 4.],
       [5., 6.]])
```

In [74]:
```
x=x.T
x
```

Out[74]:
```
array([[1., 3., 5.],
       [2., 4., 6.]])
```

In [75]:
```
np.transpose(x)
```

Out[75]:
```
array([[1., 2.],
       [3., 4.],
       [5., 6.]])
```

In [80]:
```
a = np.array([1,2,3,4,5,6])
a = a.reshape(3,2)
a = a.reshape(2,-1)
a = a.ravel()
a
```

Out[80]:
```
array([1, 2, 3, 4, 5, 6])
```

In [2]:
```
import numpy as np
np.sqrt([1,4,9])
```

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

In [3]:
```
np.sin(np.pi/2.)
```

Out[3]:
```
1.0
```

In [82]:
```
np.cos(np.pi/2.)
```

Out[82]:
```
6.123233995736766e-17
```

In [8]:
```
np.tan(1)
```

Out[8]:
```
1.5574077246549023
```

In [9]:
```
np.arcsin(1)
```

Out[9]:
```
1.5707963267948966
```

In [83]:
```
np.arccos(-1)
```

Out[83]:
```
3.141592653589793
```

In [11]:
```
np.arctan([0, 1])
```

Out[11]:
```
array([0.        , 0.78539816])
```

In [84]:
```
np.sinh(1)
```

Out[84]:
```
1.1752011936438014
```

In [13]:
```
np.prod([[1.,2.],[3.,4.]])
```

Out[13]:
```
24.0
```

In [14]:
```
np.sum([[0, 1], [0, 5]])
```

Out[14]:
```
6
```

In [18]:
```
a = np.array([[1, 2, 3], [4, 5, 6]])
np.cumsum(a)
```

Out[18]:
```
array([ 1,  3,  6, 10, 15, 21], dtype=int32)
```

In [19]:
```
a = np.array([[1,2,3], [4,5,6]])
np.cumprod(a)
```

Out[19]:
```
array([  1,   2,   6,  24, 120, 720], dtype=int32)
```

In [20]:
```
x1 = np.arange(9.0).reshape((3, 3))
x1
```

Out[20]:
```
array([[0., 1., 2.],
       [3., 4., 5.],
       [6., 7., 8.]])
```

In [22]:
```
x2 = np.arange(3.0)
x2
```

Out[22]:
```
array([0., 1., 2.])
```

In [23]:
```
np.multiply(x1, x2)
```

Out[23]:
```
array([[ 0.,  1.,  4.],
       [ 0.,  4., 10.],
       [ 0.,  7., 16.]])
```

In [24]:
```
np.add(x1,x2)
```

Out[24]:
```
array([[ 0.,  2.,  4.],
       [ 3.,  5.,  7.],
       [ 6.,  8., 10.]])
```

In [97]:
```
np.maximum([2, 3, 4], [1, 5, 2])
```

Out[97]:
```
array([2, 5, 4])
```

In [100…
```
x = np.arange(9.0)
#x
np.split(x, 3)
```

Out[100]:
```
[array([0., 1., 2.]), array([3., 4., 5.]), array([6., 7., 8.])]
```

In [31]:
```
A=np.ones((4,2))
A
```

Out[31]:
```
array([[1., 1.],
       [1., 1.],
       [1., 1.],
       [1., 1.]])
```

In [33]:
```
B=np.zeros((4,2))
B
```

Out[33]:
```
array([[0., 0.],
       [0., 0.],
       [0., 0.],
       [0., 0.]])
```

In [38]:
```
np.concatenate([A,B],axis=1)
```

Out[38]:
```
array([[1., 1., 0., 0.],
       [1., 1., 0., 0.],
       [1., 1., 0., 0.],
       [1., 1., 0., 0.]])
```

In [104…
```
import pandas as pd
import numpy as np
data={'set of numbers':[np.NaN,2,3,np.NaN,4,5]}
df=pd.DataFrame(data)
print(df)
```

```
   set of numbers
0             NaN
1             2.0
2             3.0
3             NaN
4             4.0
5             5.0
```

In [ ]:
```

```