

In [1]:

```
# Numpy
import numpy as np
```

In [2]:

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

Out[2]:

(9,)

In [4]:

```
a2 = np.array([[1,2,3,4,5,6,7,8,9]])
a2
```

Out[4]:

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

In [5]:

```
a2.shape
```

Out[5]:

(1, 9)

In [10]:

```
a3 = np.array([[1,2,3],[5,6,7]])
a3
```

Out[10]:

array([[1, 2, 3],
 [5, 6, 7]])

In [11]:

```
a3.shape
```

Out[11]:

(2, 3)

In [14]:

```
a3.shape = (3,2)
a3
```

Out[14]:

```
array([[1, 2],
       [3, 5],
       [6, 7]])
```

In [15]:

```
a3.shape = (6,1)
a3
```

Out[15]:

```
array([[1],
       [2],
       [3],
       [5],
       [6],
       [7]])
```

In [16]:

```
a3.shape = (1,6)
a3
```

Out[16]:

```
array([[1, 2, 3, 5, 6, 7]])
```

In []:

In [18]:

```
b1 = np.array([[1,2,3],[4,5,6]])
b1.shape
```

Out[18]:

```
(2, 3)
```

In [19]:

```
b2 = b1.reshape(3,2)
b2
```

Out[19]:

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

In []:

In [20]:

```
c = np.arange(10)
c
```

Out[20]:

```
array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

In [21]:

```
c1 = np.arange(1,10)
c1
```

Out[21]:

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

In [22]:

```
c2 = np.arange(0,10,2)
c2
```

Out[22]:

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

In [23]:

```
c2.ndim
```

Out[23]:

```
1
```

In []:

In [24]:

```
d = np.arange(30)
d.ndim
```

Out[24]:

```
1
```

In [25]:

```
d
```

Out[25]:

```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
        17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29])
```

In [26]:

```
# reshape
d2 = d.reshape(10,3)
d2
```

Out[26]:

```
array([[ 0,  1,  2],
       [ 3,  4,  5],
       [ 6,  7,  8],
       [ 9, 10, 11],
       [12, 13, 14],
       [15, 16, 17],
       [18, 19, 20],
       [21, 22, 23],
       [24, 25, 26],
       [27, 28, 29]])
```

In [27]:

```
# reshape
d2 = d.reshape(3,10)
d2
```

Out[27]:

```
array([[ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9],
       [10, 11, 12, 13, 14, 15, 16, 17, 18, 19],
       [20, 21, 22, 23, 24, 25, 26, 27, 28, 29]])
```

In []:

In [28]:

```
# reshape
d2 = d.reshape(15,2)
d2
```

Out[28]:

```
array([[ 0,  1],
       [ 2,  3],
       [ 4,  5],
       [ 6,  7],
       [ 8,  9],
       [10, 11],
       [12, 13],
       [14, 15],
       [16, 17],
       [18, 19],
       [20, 21],
       [22, 23],
       [24, 25],
       [26, 27],
       [28, 29]])
```

In []:

In [29]:

```
# reshape
d2 = d.reshape(6,5)
d2
```

Out[29]:

```
array([[ 0,  1,  2,  3,  4],
       [ 5,  6,  7,  8,  9],
       [10, 11, 12, 13, 14],
       [15, 16, 17, 18, 19],
       [20, 21, 22, 23, 24],
       [25, 26, 27, 28, 29]])
```

In []:

In [30]:

```
# reshape
d2 = d.reshape(5,2,3)
d2
```

Out[30]:

```
array([[[ 0,  1,  2],
        [ 3,  4,  5]],

       [[ 6,  7,  8],
        [ 9, 10, 11]],

       [[12, 13, 14],
        [15, 16, 17]],

       [[18, 19, 20],
        [21, 22, 23]],

       [[24, 25, 26],
        [27, 28, 29]]])
```

In []:

In [39]:

```
e = np.array([1,2,3,4,5,6], dtype=np.int8)
```

In [40]:

```
e.itemsize
```

Out[40]:

1

In []:

In []: