

```
In [1]: import numpy as np
```

```
In [2]: l1=[4,1,3,5]
ar1=np.array(l1)
print(ar1)
print(type(ar1))

[4 1 3 5]
<class 'numpy.ndarray'>
```

```
In [3]: print(ar1.shape)

(4,)
```

```
In [4]: print(ar1.reshape(1,4))
print(ar1.reshape(4,1))

[[4 1 3 5]]
[[4]
 [1]
 [3]
 [5]]
```

```
In [5]: ar2=ar1.reshape(1,4)
ar3=ar1.reshape(4,1)
print(ar2.shape)
print(ar3.shape)

(1, 4)
(4, 1)
```

```
In [6]: l2=[3,2,1]
l3=[6,5,4]
l4=[9,8,7]
ar4=np.array([l2,l3,l4])
print(type(ar4))
print(ar4)
print(ar4.shape)

<class 'numpy.ndarray'>
[[12 13 14]
 [12 13 14]
 [12 13 14]]
(3, 3)
```

```
In [9]: print(ar4.reshape(1,3))
print(ar4.reshape(3,1))

[[12 13 14]]
[[12]
 [13]
 [14]]
```

```
In [11]: e=[1,2,3,4,5]
f=[6,7,8,9,0]
g=[4,8,7,6,2]
h=np.array([e,f,g])
print(h)
print(type(h))
print(h.shape)

[[1 2 3 4 5]
 [6 7 8 9 0]
 [4 8 7 6 2]]
<class 'numpy.ndarray'>
(3, 5)
```

In [12]: `print(ar4)`

```
[12 13 14]
```

In [14]: `l5=[1,2,3,4,5]`  
`l6=[7,8,9,0,1]`  
`l7=[1,3,4,5,6]`  
`l8=[7,7,2,3,4]`  
`ar5=np.array([l5,l6,l7,l8])`  
`print(ar5)`

```
[[1 2 3 4 5]
 [7 8 9 0 1]
 [1 3 4 5 6]
 [7 7 2 3 4]]
```

In [15]: `print(ar5[:,:])`

```
[[1 2 3 4 5]
 [7 8 9 0 1]
 [1 3 4 5 6]
 [7 7 2 3 4]]
```

In [16]: `print(ar5[2:,1:3])`

```
[[3 4]
 [7 2]]
```

In [17]: `print(ar5[1:,1:])`

```
[[8 9 0 1]
 [3 4 5 6]
 [7 2 3 4]]
```

In [18]: `print(ar5[1:3,:2])`

```
[[7 8]
 [1 3]]
```

In [19]: `arn=np.arange(1,20)`  
`print(arn)`

```
[ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19]
```

In [20]: `arn=np.arange(2,20,2)`  
`print(arn)`

```
[ 2  4  6  8 10 12 14 16 18]
```

In [21]: `ar7=np.linspace(1,20,10)`  
`print(ar7)`

```
[ 1.          3.11111111  5.22222222  7.33333333  9.44444444 11.55555556
 13.66666667 15.77777778 17.88888889 20.          ]
```

In [23]: `arn*2`

Out[23]: `array([ 4, 8, 12, 16, 20, 24, 28, 32, 36])`

In [24]: `arn%2==0`

Out[24]: `array([ True, True, True, True, True, True, True, True, True])`

In [25]: `ar7[4:]=10`  
`print(ar7)`

```
[ 1.          3.11111111  5.22222222  7.33333333 10.          10.  
 10.          10.          10.          10.          ]
```

```
In [26]: ar8=[40,60,33,44,85,92]  
print(ar8)  
  
[40, 60, 33, 44, 85, 92]
```

```
In [27]: print(np.random.rand(3,3))  
  
[[0.64656242 0.58480324 0.78929965]  
 [0.44374679 0.19490586 0.75603001]  
 [0.86948747 0.64422463 0.58892476]]
```

```
In [28]: print(np.random.randn(3,4))  
  
[[ 0.46297426  0.07899599 -0.52713418 -0.67323766]  
 [ 0.37485828  1.37917379  1.43267321  0.87646935]  
 [-1.11581305 -0.40339886  0.77115315 -1.50298299]]
```

```
In [ ]:
```