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

```
In [17]:   l1=[4,1,3,5]
           ar1=np.array(l1)
           print(ar1)
           print(type(ar1))
```

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

```
In [18]:   print(ar1.shape)
```

```
(4,)
```

```
In [32]:   print(ar1[2])
           print(ar1[0])
```

```
3
4
```

```
In [21]:   print(ar1.reshape(1,4))
           print(ar1.reshape(4,1))
```

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

```
In [23]:   ar2=ar1.reshape(1,4)
           ar3=ar1.reshape(4,1)
           print(ar2.shape)
           print(ar3.shape)
```

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

```
In [26]:   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'>
[[3 2 1]
 [6 5 4]
 [9 8 7]]
(3, 3)
```

```
In [28]:   print(ar4.reshape(1,9))
           print(ar4.reshape(9,1))
```

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

```
     [1]
     [6]
     [5]
     [4]
     [9]
     [8]
     [7]]
```

In [33]:
```python
print(ar4)
```

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

In [38]:
```python
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 [39]:
```python
print(ar5[:,:])
```

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

In [41]:
```python
print(ar5[2:,1:3])
```

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

In [42]:
```python
print(ar5[1:,1:])
```

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

In [43]:
```python
print(ar5[1:3,:2])
```

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

In [45]:
```python
ar6=np.arange(1,10,2)
print(ar6)
```

```
[1 3 5 7 9]
```

In [51]:
```python
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 [52]:
```
ar6*2
```

Out[52]:
```
array([ 2,  6, 10, 14, 18])
```

In [53]:
```
ar6%2==0
```

Out[53]:
```
array([False, False, False, False, False])
```

In [54]:
```
ar7[4:]=10
print(ar7)
```

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

In [56]:
```
ar7[4:8:2]=11
print(ar7)
```

```
[ 1.          3.11111111  5.22222222  7.33333333 11.          10.
 11.         10.         10.         10.        ]
```

In [57]:
```
ar8=[40,60,33,44,85,92]
print(ar8)
```

```
[40, 60, 33, 44, 85, 92]
```

In [64]:
```
print(np.random.rand(3,3))
```

```
[[0.72991066 0.50998    0.88905641]
 [0.3421185  0.67076992 0.40357607]
 [0.35026408 0.28643769 0.93027306]]
```

In [62]:
```
print(np.random.randn(3,4))
```

```
[[-0.19128195 -0.95495528 -0.08654561  0.69225019]
 [-0.76866842  1.78579578  0.05163146  0.75759912]
 [-1.68146054  0.3478858   0.99889767 -0.96960736]]
```

In [ ]: