In [4]:
```
import numpy as np
c=np.linspace(5 ,10 ,5)
print(c)
```

```
[ 5.    6.25  7.5   8.75 10.  ]
```

In [6]:
```
d=np.ones([3,3])
print(d)
```

```
[[1. 1. 1.]
 [1. 1. 1.]
 [1. 1. 1.]]
```

In [7]:
```
d=np.zeros([3,3])
print(d)
```

```
[[0. 0. 0.]
 [0. 0. 0.]
 [0. 0. 0.]]
```

In [8]:
```
a=np.eye(3)
print(a)
```

```
[[1. 0. 0.]
 [0. 1. 0.]
 [0. 0. 1.]]
```

In [9]:
```
a=np.eye(3,2)
print(a)
```

```
[[1. 0.]
 [0. 1.]
 [0. 0.]]
```

In [21]:
```
a=np.diag([1,2,3,4])
print(a)
```

```
[[1 0 0 0]
 [0 2 0 0]
 [0 0 3 0]
 [0 0 0 4]]
```

In [13]:
```
a=np.random.rand(4)
print(a)
```

```
[0.16824358 0.85207695 0.95451941 0.27701862]
```

In [18]:
```
a=np.arange(10,dtype='float')
print(a)
```

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

In [22]:
```
b=np.array([1+2j,5+1j])
print(b.dtype)
```

```
complex128
```

In [23]:
```
c=np.array([True,False,True])
print(c)
```

```
[ True False  True]
```

In [24]:
```
b=np.array([True,False,True])
print(b.dtype)
```

```
bool
```

In [25]:
```
a=np.arange(10)

print(a)

print(a[5])

print(a[-1])
```

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

In [26]:
```
b=np.diag([1,2,3])

print(b)

print(b[2,2])
```

```
[[1 0 0]
 [0 2 0]
 [0 0 3]]
3
```

In [27]:
```
b[2,1]=10

print(b)
```

```
[[ 1  0  0]
 [ 0  2  0]
 [ 0 10  3]]
```

In [28]:
```
a=np.arange(10)

print(a[1:10:2])
```

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

In [29]:
```
b=np.arange(10)
b[5:]=10
print(b)
```

```
[ 0  1  2  3  4 10 10 10 10 10]
```

In [30]:
```
a=np.arange(10)
b=a[::2]
np.shares_memory(a,b)
```

Out[30]:
```
True
```

In [31]:
```
b[0]=10
print(b)
print(a)
```

```
[10  2  4  6  8]
[10  1  2  3  4  5  6  7  8  9]
```

In [32]:
```
c=a[::2].copy()
np.shares_memory(a,c)
```

Out[32]:
```
False
```

In [33]:
```
c[0]=5
print(c)
print(a)
```

```
[5 2 4 6 8]
[10  1  2  3  4  5  6  7  8  9]
```

In [34]:
```
a=np.random.randint(0,20,15)
print(a)
```

```
[18  6 11  1 17 18 13  2  2  6  5 13  3 16  7]
```

In [38]:
```
mask=(a % 2==0)
```

In [39]:
```
even_numbers=a[mask]
print(even_numbers)
```

```
[18  6 18  2  2  6 16]
```

In [40]:
```
a[mask]=1
print(a)
```

```
[ 1  1 11  1 17  1 13  1  1  1  5 13  3  1  7]
```

In [41]:
```
a=np.arange(0,100,10)
print(a)
```

```
[ 0 10 20 30 40 50 60 70 80 90]
```

In [42]:
```
b=a[[2,3,5,2,4]]
print(b)
```

```
[20 30 50 20 40]
```

In [43]:
```
a[[9,7]]=200
print(a)
print(b)
```

```
[  0  10  20  30  40  50  60 200  80 200]
[20 30 50 20 40]
```

In [45]:
```
a=np.arange(10)
print(a+1)
```

```
[ 1  2  3  4  5  6  7  8  9 10]
```

In [46]:
```
print(a**2)
```

```
[ 0  1  4  9 16 25 36 49 64 81]
```

In [47]:
```
b=np.ones(10)+1
print("b= ",b)
print("a-b= ",a-b)
```

```
b=  [2. 2. 2. 2. 2. 2. 2. 2. 2. 2.]
a-b=  [-2. -1.  0.  1.  2.  3.  4.  5.  6.  7.]
```

In [48]:
```
print(a*b)
```

```
[ 0.  2.  4.  6.  8. 10. 12. 14. 16. 18.]
```

In [49]:
```
c=np.diag([1,2,3,4])
print(c)
print("*"*100)
print(c*c)
print("*"*100)
print(c.dot(c))
```

```
[[1 0 0 0]
 [0 2 0 0]
 [0 0 3 0]
 [0 0 0 4]]
****************************************************************************************************
[[ 1  0  0  0]
 [ 0  4  0  0]
 [ 0  0  9  0]
 [ 0  0  0 16]]
****************************************************************************************************
[[ 1  0  0  0]
 [ 0  4  0  0]
 [ 0  0  9  0]
 [ 0  0  0 16]]
```