1. Given are 2 similar dimensional numpy arrays, how to get a numpy array output
in which every element is an element-wise sum of the 2 numpy arrays?

In [4]:
```
import numpy as np
a=np.array([1,2,3,4])
b=np.array([6,7,5,4])
print(a+b)
```

```
[7 9 8 8]
```

2. Given a numpy array (matrix), how to get a numpy array output which is equal to
the original matrix multiplied by a scalar?

In [5]:
```
m=np.array([[1,2,3],[4,5,6],[8,9,7]])
4*m
```

Out[5]:
```
array([[ 4,  8, 12],
       [16, 20, 24],
       [32, 36, 28]])
```

3. Create an identity matrix of dimension 4-by-4.

In [6]:
```
np.eye(4)
```

Out[6]:
```
array([[1., 0., 0., 0.],
       [0., 1., 0., 0.],
       [0., 0., 1., 0.],
       [0., 0., 0., 1.]])
```

4. Convert a 1-D array to a 3-D array

In [7]:
```
np.array([1,2,3,4,5,6,7,8]).reshape(2,2,2)
```

Out[7]:
```
array([[[1, 2],
        [3, 4]],

       [[5, 6],
        [7, 8]]])
```

5. Convert a binary numpy array (containing only 0s and 1s) to a boolean numpy array

In [16]:
```
a=np.array([[1,0,1,0],[0,1,1,0]],dtype='bool')
a
```

Out[16]:
```
array([[ True, False,  True, False],
       [False,  True,  True, False]])
```

6. Convert all the elements of a numpy array from float to integer datatype

In [29]:
```
a=np.array([[1,0,5,0],[79,1,1,0]],dtype='float')
print(a.dtype)
a=a.astype('int32')
print(a.dtype)
```

```
float64
int32
```

7. Stack 2 numpy arrays horizontally i.e., 2 arrays having the same 1st dimension
(number of rows in 2D arrays)

In [30]:
```
a=np.array([1,2,3,4])
b=np.array([5,6,7,8])
np.array((a,b))
```

Out[30]:
```
array([[1, 2, 3, 4],
       [5, 6, 7, 8]])
```

8. Output a sequence of equally gapped 5 numbers in the range 0 to 100 (both inclusive)

In [31]:
```
np.arange(0,101,5)
```

Out[31]:
```
array([  0,   5,  10,  15,  20,  25,  30,  35,  40,  45,  50,  55,  60,
        65,  70,  75,  80,  85,  90,  95, 100])
```

9. Output a matrix (numpy array) of dimension 2-by-3 with each and every value equal to 5

In [35]:
```
a=5*np.ones(3,dtype='int32')
np.array((a,a))
```

Out[35]:
```
array([[5, 5, 5],
       [5, 5, 5]])
```

10.Given 2 numpy arrays as matrices, output the result of multiplying the 2 matrices
(as a numpy array)

In [48]:
```
a=np.array([1,2,3,4,5,6,7,8,9]).reshape(3,3)
print(a)
a*a
```

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

Out[48]:
```
array([[ 1,  4,  9],
       [16, 25, 36],
       [49, 64, 81]])
```

11. Output the array element indexes such that the array elements appear in the ascending order

In [46]:
```
a=np.array([4,6,1,8,3,9],dtype='int32')
print(a)
a.sort()
a
```

```
[4 6 1 8 3 9]
```

Out[46]:
```
array([1, 3, 4, 6, 8, 9])
```

12.Multiply a 5x3 matrix by a 3x2 matrix (real matrix product)

In [51]:
```
a=np.array([1,2,3,4,5,6,7,8,9,10,3,4,5,8,5],dtype='int32').reshape(5,3)
b=np.array([1,2,3,4,5,6],dtype='int32').reshape(3,2)
print(a)
print()
print(b)
np.dot(a,b)
```

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

[[1 2]
 [3 4]
 [5 6]]
```

Out[51]:
```
array([[ 22,  28],
       [ 49,  64],
       [ 76, 100],
       [ 39,  56],
       [ 54,  72]])
```

In [ ]: