In [1]:
```
import numpy as np
a=np.array([[1,2,4],[5,8,7]])
print("Array created using passed list:\n",a)
```

```
Array created using passed list:
 [[1 2 4]
 [5 8 7]]
```

In [2]:
```
b=np.zeros((3,4))
print("\nAn array initialized with all zeros:\n",b)
```

```
An array initialized with all zeros:
 [[0. 0. 0. 0.]
 [0. 0. 0. 0.]
 [0. 0. 0. 0.]]
```

In [3]:
```
c=np.full((3,3),6)
print("\nAn array intialized with all 6s.\n",c)
```

```
An array intialized with all 6s.
 [[6 6 6]
 [6 6 6]
 [6 6 6]]
```

In [4]:
```
d=np.random.random((2,2))
print("\nA random array:\n",d)
```

```
A random array:
 [[0.36596815 0.82893606]
 [0.0152295  0.8506813 ]]
```

In [5]:
```
e=np.arange(0,30,5)
print("\nA sequential array with steps of 5:\n",e)
```

```
A sequential array with steps of 5:
 [ 0  5 10 15 20 25]
```

In [6]:
```
arr=np.array([[1,2,3,4],[5,2,4,2],[1,2,0,1]])
newarr=arr.reshape(4,3)
print("\nOriginal array:\n",arr)
print("Reshaped array[4:3]:\n",newarr)
```

```
Original array:
 [[1 2 3 4]
 [5 2 4 2]
 [1 2 0 1]]
Reshaped array[4:3]:
 [[1 2 3]
 [4 5 2]
 [4 2 1]
 [2 0 1]]
```

In [7]:
```
flarr=arr.flatten()
print("\nOriginal array:\n",arr)
print("Flattened array:\n",flarr)
```

```
Original array:
 [[1 2 3 4]
 [5 2 4 2]
 [1 2 0 1]]
Flattened array:
 [1 2 3 4 5 2 4 2 1 2 0 1]
```

In [8]:
```
print("\nNo of dimensions: ",arr.ndim)
```

```
No of dimensions:  2
```

In [9]:
```
print("\nShape of array: ",arr.shape)
```

```
Shape of array:  (3, 4)
```

In [10]:
```
print("\nSize of array: ",arr.size)
```

```
Size of array:  12
```

In [11]:
```
print("\n Array stores elements of type: ",arr.dtype)
```

```
 Array stores elements of type:  int64
```

In [12]:
```
newtype=arr.astype('f')
print("\nConverted array elements:\n",newtype)
print("Converted arraytype: ",newtype.dtype)
```

```
Converted array elements:
 [[1. 2. 3. 4.]
 [5. 2. 4. 2.]
 [1. 2. 0. 1.]]
Converted arraytype:  float32
```

In [17]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
print(p[2,0:2])
```

```
[7 8]
```

In [18]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
print(p[2:,2:])
```

```
[[ 9]
 [12]
 [15]]
```

In [22]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
print(p[:,1])
```

```
[ 2  5  8 11 14]
```

In [23]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
print(p[3:,3:])
```

```
[]
```

In [24]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
print(p[3:0:-1])
```

```
[[10 11 12]
 [ 7  8  9]
 [ 4  5  6]]
```

In [25]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
c=p.astype('f')
print(c)
```

```
[[ 1.  2.  3.]
 [ 4.  5.  6.]
 [ 7.  8.  9.]
 [10. 11. 12.]
 [13. 14. 15.]]
```

In [26]:
```
p=np.array([[1,2,3],[4,5,6],[7,8,9],[10,11,12],[13,14,15]])
c=p.astype('i')
print(c)
```

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