In [ ]:
```
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#Roll_no:22150
```

In [1]:
```
my_list=[1,2,3,4,5,6]
print(my_list)
```

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

In [2]:
```
import numpy as np
```

In [3]:
```

array=np.array(my_list,dtype=int)
print(array)
```

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

In [4]:
```
print(type(array))
print(len(array))
print(array.ndim)
print(array.shape)
```

```
<class 'numpy.ndarray'>
6
1
(6,)
```

In [5]:
```
array2=array.reshape(3,2)
print(array2)
array2.shape
```

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

Out[5]:
```
(3, 2)
```

In [7]:
```
array3=array.reshape(3,-1)
print(array3)
print(array3.ndim)
```

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

In [11]:
```
##Intializing numpy arrays from nested python lists

my_list2=[1,2,3,4,5]
my_list3=[2,3,4,5,6]
my_list4=[9,7,6,8,9]

mul_arr=np.array([my_list2,my_list3,my_list4])
print(mul_arr)
print(mul_arr.shape)
```

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

In [12]:
```
mul_arr.reshape(1,15)
```

Out[12]:
```
array([[1, 2, 3, 4, 5, 2, 3, 4, 5, 6, 9, 7, 6, 8, 9]])
```

In [13]:
```
#NUMPY Attributes

a=np.array([[1,2,3],[4,5,6]])
print(a.shape)
```

```
(2, 3)
```

In [14]:
```
#reshaping the ndarray
a.shape=(3,2)
print(a)
```

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

In [15]:
```
#reshape function to resize an array
b=a.reshape(3,2)
print(b)
```

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

In [22]:
```
r=range(24)
print(r)
```

```
range(0, 24)
```

In [23]:
```
#an array of evenly spaced numbers
a=np.arange(24)
print(a)
print(a.ndim)
```

```
[ 0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23]
1
```

In [24]:
```
#reshaping the array 'a'
b=a.reshape(6,4,1)
print(b)
```

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

 [[ 4]
  [ 5]
  [ 6]
  [ 7]]

 [[ 8]
  [ 9]
  [10]
  [11]]

 [[12]
  [13]
  [14]
  [15]]

 [[16]
  [17]
  [18]
  [19]]

 [[20]
  [21]
  [22]
  [23]]]
```

In [26]:
```
#dtype of array is int8(1 byte)
x=np.array([1,2,3,4,5],dtype=np.int8)
print(x.itemsize)
```

```
1
```

In [27]:
```
#dtype of array is now float32(4 bytes)
x=np.array([1,2,3,4,5],dtype=np.float32)
print(x.itemsize)
```

```
4
```

In [29]:
```
x=np.array([[1,2],[3,4]],dtype=np.float64)
y=np.array([[5,6],[7,8]],dtype=np.float64)
print(x)
print(y)
```

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

In [30]:
```
print(x+y)
print(np.add(x,y))
```

```
[[ 6.  8.]
 [10. 12.]]
[[ 6.  8.]
 [10. 12.]]
```

In [32]:
```
print(x-y)
print(np.subtract(x,y))
```

```
[[-4. -4.]
 [-4. -4.]]
[[-4. -4.]
 [-4. -4.]]
```

In [33]:
```
print(x*y)
print(np.multiply(x,y))
print(x.dot(y))
```

```
[[ 5. 12.]
 [21. 32.]]
[[ 5. 12.]
 [21. 32.]]
[[19. 22.]
 [43. 50.]]
```

In [34]:
```
print(x.dot(y))
print(np.dot(x,y))
```

```
[[19. 22.]
 [43. 50.]]
[[19. 22.]
 [43. 50.]]
```

In [35]:
```
print(x/y)
print(np.divide(x,y))
```

```
[[0.2        0.33333333]
 [0.42857143 0.5       ]]
[[0.2        0.33333333]
 [0.42857143 0.5       ]]
```

In [36]:
```
print(np.sum(x))
print(np.sum(x,axis=0))
print(np.sum(x,axis=1))
```

```
10.0
[4. 6.]
[3. 7.]
```

In [ ]:
```

```