

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

```
In [2]: import sys  
sys.version
```

```
Out[2]: '3.12.7 | packaged by Anaconda, Inc. | (main, Oct 4 2024, 13:17:27) [MSC v.192  
9 64 bit (AMD64)]'
```

```
In [3]: import numpy as np
```

```
In [4]: np.__version__
```

```
Out[4]: '1.26.4'
```

```
In [5]: my_list=[0,1,2,3,4,5]  
my_list
```

```
Out[5]: [0, 1, 2, 3, 4, 5]
```

```
In [6]: type(my_list)
```

```
Out[6]: list
```

```
In [7]: arr=np.array(my_list)  
arr
```

```
Out[7]: array([0, 1, 2, 3, 4, 5])
```

```
In [8]: type(arr)
```

```
Out[8]: numpy.ndarray
```

```
In [9]: print(type(arr))  
print(type(my_list))  
  
<class 'numpy.ndarray'>  
<class 'list'>
```

```
In [11]: np.arange(10)
```

```
Out[11]: array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

```
In [12]: np.arange(10,20)
```

```
Out[12]: array([10, 11, 12, 13, 14, 15, 16, 17, 18, 19])
```

```
In [13]: np.arange(10,50,5)
```

```
Out[13]: array([10, 15, 20, 25, 30, 35, 40, 45])
```

```
In [14]: np.arange(10,30,3)
```

```
Out[14]: array([10, 13, 16, 19, 22, 25, 28])
```

```
In [15]: np.arange(10,30,3,4)
```

```
-----
TypeError                                Traceback (most recent call last)
Cell In[15], line 1
----> 1 np.arange(10,30,3,4)

TypeError: Cannot interpret '4' as a data type
```

```
In [16]: np.arange(20,8)
```

```
Out[16]: array([], dtype=int32)
```

```
In [17]: np.arange(-20,8)# 1st arg less than 2nd arg
```

```
Out[17]: array([-20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8,
               -7, -6, -5, -4, -3, -2, -1,  0,  1,  2,  3,  4,  5,
                6,  7])
```

```
In [18]: n=np.arange(-20,8)
n
```

```
Out[18]: array([-20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8,
               -7, -6, -5, -4, -3, -2, -1,  0,  1,  2,  3,  4,  5,
                6,  7])
```

```
In [19]: np.zeros(3)
```

```
Out[19]: array([0., 0., 0.])
```

```
In [21]: np.zeros(3, dtype=int)
```

```
Out[21]: array([0, 0, 0])
```

```
In [23]: z=(np.zeros(5))
z
```

```
Out[23]: array([0., 0., 0., 0., 0.])
```

```
In [25]: np.zeros((5,3)) #
```

```
Out[25]: array([[0., 0., 0.],
               [0., 0., 0.],
               [0., 0., 0.],
               [0., 0., 0.],
               [0., 0., 0.]])
```

```
In [26]: np.zeros((2,2)) # 2d array
```

```
Out[26]: array([[0., 0.],
               [0., 0.]])
```

```
In [27]: np.zeros((3,3), dtype=int)
```

```
Out[27]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [29]: nd=np.zeros((5,9), dtype=int)
nd
```

```
Out[29]: array([[0, 0, 0, 0, 0, 0, 0, 0, 0],
               [0, 0, 0, 0, 0, 0, 0, 0, 0],
               [0, 0, 0, 0, 0, 0, 0, 0, 0],
               [0, 0, 0, 0, 0, 0, 0, 0, 0],
               [0, 0, 0, 0, 0, 0, 0, 0, 0]])
```

```
In [30]: len(nd)
```

```
Out[30]: 5
```

```
In [32]: np.ones(3)
```

```
Out[32]: array([1., 1., 1.])
```

```
In [34]: np.ones((3), dtype=int)
```

```
Out[34]: array([1, 1, 1])
```

```
In [37]: tn=np.ones((10,10), dtype=int)
tn
```

```
Out[37]: array([[1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1],
               [1, 1, 1, 1, 1, 1, 1, 1, 1, 1]])
```

```
In [38]: len(tn)
```

```
Out[38]: 10
```

```
In [ ]:
```