

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

```
Out[2]: '3.12.7 | packaged by Anaconda, Inc. | (main, Oct 4 2024, 13:17:27) [MSC v.1929 6  
4 bit (AMD64)]'
```

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

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

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

Create list

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

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

```
Out[12]: array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

```
In [13]: np.arange(10,20)
```

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

```
In [15]: np.arange(10,50,5)
```

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

```
In [16]: np.arange(10,30,3)
```

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

```
In [17]: np.arange(10,30,30,3)
```

```
-----  
TypeError                                Traceback (most recent call last)  
Cell In[17], line 1  
----> 1 np.arange(10,30,30,3)  
  
TypeError: Cannot interpret '3' as a data type
```

```
In [19]: np.arange(8,20)
```

```
Out[19]: array([ 8,  9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19])
```

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

```
Out[18]: array([], dtype=int32)
```

```
In [21]: np.arange(-20,8) # 1st arg < 2nd arg
```

```
Out[21]: 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 [22]: n=np.arange(-20,8)  
n
```

```
Out[22]: 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 [24]: np.zeros(3)
```

```
Out[24]: array([0., 0., 0.])
```

```
In [25]: np.zeros(3,dtype=int)
```

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

```
In [26]: z=np.zeros(5)  
z
```

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

```
In [29]: np.zeros((2,2)) #2d array
```

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

```
In [31]: np.zeros((3,3),dtype=int)
```

```
Out[31]: array([[0, 0, 0],  
                [0, 0, 0],  
                [0, 0, 0]])
```

```
In [33]: nd=np.zeros((5,9),dtype=int)
nd
```

```
Out[33]: 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 [36]: np.ones(3)
```

```
Out[36]: array([1., 1., 1.])
```

```
In [37]: np.ones(3,dtype=int)
```

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

```
In [38]: nd1=np.ones((10,10), dtype=int)
nd1
```

```
Out[38]: 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 [39]: np.three(3)
```

```
-----
AttributeError                                Traceback (most recent call last)
Cell In[39], line 1
----> 1 np.three(3)

File ~\anaconda3\Lib\site-packages\numpy\__init__.py:333, in __getattr__(attr)
    330     "Removed in NumPy 1.25.0"
    331     raise RuntimeError("Tester was removed in NumPy 1.25.")
--> 333 raise AttributeError("module {!r} has no attribute "
    334                        "{!r}".format(__name__, attr))

AttributeError: module 'numpy' has no attribute 'three'
```

```
In [40]: nd1
```

```
Out[40]: 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],
                [1, 1, 1, 1, 1, 1, 1, 1, 1, 1]])
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