

NUMPY

```
import numpy as np
np.__version__
'1.26.4'
my_list=[0,1,2,3,4,5]
my_list
[0, 1, 2, 3, 4, 5]
type(my_list)
list
arr=np.array(my_list)
arr
array([0, 1, 2, 3, 4, 5])
type(arr)
numpy.ndarray
np.arange(15)
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14])
np.arange(3.0)
array([0., 1., 2.])
np.arange(0,5)
array([0, 1, 2, 3, 4])
np.arange(10,20)
array([10, 11, 12, 13, 14, 15, 16, 17, 18, 19])
np.arange(8.0)
array([0., 1., 2., 3., 4., 5., 6., 7.])
np.arange(20,10)
array([], dtype=int32)
np.arange(-20,10)
```

```
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, 8, 9])
```

```
np.arange(-16,10)
```

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

```
np.arange(-20,-10)
```

```
array([-20, -19, -18, -17, -16, -15, -14, -13, -12, -11])
```

```
np.arange(30,20)
```

```
array([], dtype=int32)
```

```
ar=np.arange(-30,20)
ar
```

```
array([-30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -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,
        8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19])
```

```
np.arange(10,10)
```

```
array([], dtype=int32)
```

```
np.arange(10,30,5)
```

```
array([10, 15, 20, 25])
```

```
np.arange(0,10,3)
```

```
array([0, 3, 6, 9])
```

```
np.zeros(3)
```

```
array([0., 0., 0.])
```

```
np.zeros(5,dtype=int)
```

```
array([0, 0, 0, 0, 0])
```

```
np.zeros(3)
```

```

-----
NameError                                Traceback (most recent call
last)
Cell In[2], line 1
----> 1 np.zeros(3)

NameError: name 'np' is not defined

import numpy as np

np.zeros(3)
array([0., 0., 0.])

np.zeros(3,dtype=int)
array([0, 0, 0])

np.zeros((2,2),dtype=int)
array([[0, 0],
       [0, 0]])

np.zeros((2,2))
array([[0., 0.],
       [0., 0.]])

np.zeros((2,10))
array([[0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
       [0., 0., 0., 0., 0., 0., 0., 0., 0., 0.]])

np.zeros((2,10),dtype=int)
array([[0, 0, 0, 0, 0, 0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0, 0, 0, 0, 0, 0]])

np.zeros((3,3))
array([[0., 0., 0.],
       [0., 0., 0.],
       [0., 0., 0.]])

np.zeros((10,30))
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., 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.]])

```



```
rand(3,2)
random.rand(3,2)
```

```
-----
-----
NameError                                Traceback (most recent call
last)
Cell In[30], line 1
----> 1 rand(3,2)
      2 random.rand(3,2)
```

NameError: name 'rand' is not defined

```
np.random.rand(5)
```

```
array([0.74786944, 0.81754428, 0.62907824, 0.24325233, 0.51496309])
```

```
np.random.rand(2,4)
```

```
array([[0.53078674, 0.36525225, 0.36826084, 0.06487906],
       [0.59012558, 0.17152731, 0.33715162, 0.57316775]])
```

```
np.random.rand(3,4)
```

```
array([[0.78638321, 0.75956026, 0.29952239, 0.53887207],
       [0.99573207, 0.39341301, 0.59181588, 0.96304149],
       [0.01544236, 0.55239317, 0.29677839, 0.31144758]])
```

```
np.random.randint(2,4)
```

```
2
```

```
np.random.randint(2,20)
```

```
7
```

```
np.random.randint(0,1)
```

```
0
```

```
np.random.randint(10,20,5)
```

```
array([10, 18, 15, 16, 14])
```