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 [7]:
```
# creating the list
mylist=[0,1,2,3,4,5]
mylist
```

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

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

Out[8]:
```
list
```

In [9]:
```
arr= np.array(mylist)      # creating the array in list
arr
```

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

In [10]:
```
type(arr)      # ndarray is the multi dimensional array
```

Out[10]:
```
numpy.ndarray
```

In [12]:
```
print(type(arr))
print(type(mylist))
```

```
<class 'numpy.ndarray'>
<class 'list'>
```

In [14]:
```
np.arange(10)       # 1d array
```

Out[14]:
```
array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

In [15]:
```
np.arange(10,20)
```

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

In [17]:
```
np.arange(10,50,5)     # start,stop,step
```

Out[17]:
```
array([10, 15, 20, 25, 30, 35, 40, 45])
```

In [18]:
```
np.arange(10,30,3)         # the Arange is only apply in numpy
```

Out[18]:
```
array([10, 13, 16, 19, 22, 25, 28])
```

In [19]:
```
np.arange(10,20,5,2)     # we can only assian the three arguments only
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[19], line 1
----> 1 np.arange(10,20,5,2)

TypeError: Cannot interpret '2' as a data type
```

In [20]:
```
np.arange(20,8)    # here the the arguments are first is highest values it cant
```

Out[20]:
```
array([], dtype=int32)
```

In [21]:
```
np.arange(8,20)     # here the arguments is the first one is small value it can
```

Out[21]:
```
array([ 8,  9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19])
```

In [24]:
```
np.arange(-30,8)
```

Out[24]:
```
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])
```

In [26]:
```
n=np.arange(-30,8)
n
```

Out[26]:
```
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])
```

zeros()

In [27]:
```
np.zeros(3)
```

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

In [28]:
```
np.zeros(3,dtype=int)
```

Out[28]:
```
array([0, 0, 0])
```

In [29]:
```
z=np.zeros(5)
z
```

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

In [31]:
```
np.zeros((5,3))
```

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

In [33]:
```
np.zeros((2,2))    #2d array
```

Out[33]:
```
array([[0., 0.],
       [0., 0.]])
```

In [34]:
```
np.zeros((3,3),dtype=int)    # creating the matrix in int values
                            #3x3  first is row and second is col
```

Out[34]:
```
array([[0, 0, 0],
       [0, 0, 0],
       [0, 0, 0]])
```

In [35]:
```
nd=np.zeros((5,9),dtype=int)
nd
```

Out[35]:
```
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 [38]:
```
np.ones((3),dtype=int)
```

Out[38]:
```
array([1, 1, 1])
```

In [39]:
```
np.ones((10,10),dtype=int)
```

Out[39]:
```
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 [40]:
```
nd1=np.ones((10,10),dtype=int)
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]])
```

In [41]:
```
np.three(3)    #module 'numpy' has no attribute 'three'
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[41], 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 [42]:
```
nd1
```

Out[42]:
```
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 [ ]:
```

```