Numpy

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

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

Out[4]:
```
'1.24.3'
```

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

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

In [7]:
```
type(my_list)
```

Out[7]:
```
list
```

In [9]:
```
arr = np.array(my_list)
arr
```

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

In [10]:
```
print(type(arr))
```

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

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 [14]:
```
np.arange(10,50,5)
```

Out[14]:
```
array([10, 15, 20, 25, 30, 35, 40, 45])
```

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

Out[15]:
```
array([], dtype=int32)
```

In [16]:
```
np.arange(-20,10)
```

Out[16]:
```
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])
```

In [19]:
```
np.zeros(5) # Paramater tuning
```

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

In [20]:
```
np.zeros(5, dtype=int) # HyperParamater Tunning
```

Out[20]:
```
array([0, 0, 0, 0, 0])
```

In [21]:
```
np.zeros([2,2])
```

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

In [22]:
```
np.zeros([5,4])
```

Out[22]:
```
array([[0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.]])
```

In [23]:
```
np.ones(2)
```

Out[23]:
```
array([1., 1.])
```

In [24]:
```
np.ones(5, dtype=int)
```

Out[24]:
```
array([1, 1, 1, 1, 1])
```

In [25]:
```
np.ones([2,5])
```

Out[25]:
```
array([[1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.]])
```

In [26]:
```
arr
```

Out[26]:
```
array([0, 1, 2, 3, 4, 5])
```

In [27]:
```
rand(3,2)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[27], line 1
----> 1 rand(3,2)

NameError: name 'rand' is not defined
```

In [28]:
```
random.rand(3,2)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[28], line 1
----> 1 random.rand(3,2)

NameError: name 'random' is not defined
```

In [29]:
```
np.random.rand(3,2)
```

Out[29]:
```
array([[0.19784848, 0.85658348],
       [0.07518712, 0.52078009],
       [0.61843286, 0.26409299]])
```

In [30]:
```
np.random.rand(3)
```

Out[30]:
```
array([0.16894169, 0.42302976, 0.74952555])
```

In [40]:
```
np.random.randint(4,6)
```

Out[40]:
```
5
```

In [44]:
```
np.random.randint(0,10)
```

Out[44]:
```
7
```

In [45]:
```
np.random.randint(0,10,4)
```

Out[45]:
```
array([1, 9, 6, 0])
```

In [47]:
```
n = np.random.randint(10,40,(8,10))
n
```

Out[47]:
```
array([[39, 16, 10, 15, 10, 13, 21, 15, 28, 32],
       [26, 22, 14, 31, 35, 28, 31, 19, 34, 11],
       [37, 30, 21, 25, 23, 10, 29, 16, 27, 11],
       [23, 15, 35, 20, 14, 30, 11, 30, 33, 24],
       [12, 12, 39, 19, 30, 31, 37, 24, 19, 34],
       [22, 35, 18, 33, 24, 26, 22, 39, 30, 30],
       [10, 35, 36, 22, 36, 30, 30, 11, 28, 23],
       [13, 37, 24, 18, 27, 39, 20, 26, 13, 38]])
```

In [48]:
```
n[0]
```

Out[48]:
```
array([39, 16, 10, 15, 10, 13, 21, 15, 28, 32])
```

In [49]:
```
n[5]
```

Out[49]:
```
array([22, 35, 18, 33, 24, 26, 22, 39, 30, 30])
```

In [50]:
```
n[0:6]
```

Out[50]:
```
array([[39, 16, 10, 15, 10, 13, 21, 15, 28, 32],
       [26, 22, 14, 31, 35, 28, 31, 19, 34, 11],
       [37, 30, 21, 25, 23, 10, 29, 16, 27, 11],
       [23, 15, 35, 20, 14, 30, 11, 30, 33, 24],
       [12, 12, 39, 19, 30, 31, 37, 24, 19, 34],
       [22, 35, 18, 33, 24, 26, 22, 39, 30, 30]])
```

In [51]:
```
n[::-1]
```

Out[51]:
```
array([[13, 37, 24, 18, 27, 39, 20, 26, 13, 38],
       [10, 35, 36, 22, 36, 30, 30, 11, 28, 23],
       [22, 35, 18, 33, 24, 26, 22, 39, 30, 30],
       [12, 12, 39, 19, 30, 31, 37, 24, 19, 34],
       [23, 15, 35, 20, 14, 30, 11, 30, 33, 24],
       [37, 30, 21, 25, 23, 10, 29, 16, 27, 11],
       [26, 22, 14, 31, 35, 28, 31, 19, 34, 11],
       [39, 16, 10, 15, 10, 13, 21, 15, 28, 32]])
```

In [53]:
```
n[::2]
```

Out[53]:
```
array([[39, 16, 10, 15, 10, 13, 21, 15, 28, 32],
       [37, 30, 21, 25, 23, 10, 29, 16, 27, 11],
       [12, 12, 39, 19, 30, 31, 37, 24, 19, 34],
       [10, 35, 36, 22, 36, 30, 30, 11, 28, 23]])
```

In [54]:
```
n
```

Out[54]:
```
array([[39, 16, 10, 15, 10, 13, 21, 15, 28, 32],
       [26, 22, 14, 31, 35, 28, 31, 19, 34, 11],
       [37, 30, 21, 25, 23, 10, 29, 16, 27, 11],
       [23, 15, 35, 20, 14, 30, 11, 30, 33, 24],
       [12, 12, 39, 19, 30, 31, 37, 24, 19, 34],
       [22, 35, 18, 33, 24, 26, 22, 39, 30, 30],
       [10, 35, 36, 22, 36, 30, 30, 11, 28, 23],
       [13, 37, 24, 18, 27, 39, 20, 26, 13, 38]])
```

In [55]:
```
n[0,5]
```

Out[55]:
```
13
```

In [56]:
```
np.arange(1,13).reshape(3,4)
```

Out[56]:
```
array([[ 1,  2,  3,  4],
       [ 5,  6,  7,  8],
       [ 9, 10, 11, 12]])
```

In [57]:
```
np.arange(1,13).reshape(6,2)
```

Out[57]:
```
array([[ 1,  2],
       [ 3,  4],
       [ 5,  6],
       [ 7,  8],
       [ 9, 10],
       [11, 12]])
```

In [58]:
```
np.arange(1,13).reshape(12,1)
```

Out[58]:
```
array([[ 1],
       [ 2],
       [ 3],
       [ 4],
       [ 5],
       [ 6],
       [ 7],
       [ 8],
       [ 9],
       [10],
       [11],
       [12]])
```

In [ ]: