NumPy

October 14, 2023

1 NumPy

[3]:
```
import numpy as np
b=np.array([[12,7,3],
   [4,5,6],
   [7,8,9]])
print(b)
print(type(b))
print()


a=([[12,7,3],
   [4,5,6],
   [7,8,9]])
print(a)
print(type(a))
```

```
[[12  7  3]
 [ 4  5  6]
 [ 7  8  9]]
<class 'numpy.ndarray'>

[[12, 7, 3], [4, 5, 6], [7, 8, 9]]
<class 'list'>
```

[16]:
```
a=np.array([[1,2,3,4],[5,6,7,8]])
print(a)
```

```
[[1 2 3 4]
 [5 6 7 8]]
```

[15]:
```
a=np.
 ↪array([[[1,2,3,4],[5,6,7,8],[9,10,11,12]],[[4,2,3,7],[9,8,7,11],[10,12,14,16]]])
print(a)
```

```
[[[ 1  2  3  4]
  [ 5  6  7  8]
```

```
 [ 9 10 11 12]]

[[ 4  2  3  7]
 [ 9  8  7 11]
 [10 12 14 16]]]
```

1.1 zeroes()

[29]:
```
a=np.zeros([4,5])
print(a)
print()
a=np.zeros([3,3,4])
print(a)
```

```
[[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.]]]
```

2 nd array with specified value

[32]:
```
a=np.full((3,4),6)
print(a)
```

```
[[6 6 6 6]
 [6 6 6 6]
 [6 6 6 6]]
```

[36]:
```
a=np.full((5,6),12)
print(a)
print(a.dtype)
```

```
[[12 12 12 12 12 12]
 [12 12 12 12 12 12]
 [12 12 12 12 12 12]
 [12 12 12 12 12 12]
 [12 12 12 12 12 12]]
int32
```

2.1 arange()

[ ]:
```
import numpy as np

# create an array with values from 0 to 4
array1 = np.arange(5)

print("Using np.arange(5):", array1)

# create an array with values from 1 to 8 with a step of 2
array2 = np.arange(1, 9, 2)

print("Using np.arange(1, 9, 2):",array2)
```

3 Attributes

3.0.1 ndim

[41]:
```
a=np.array([[1,2,3,4],[5,6,7,8]])
print(a.ndim)
```

```
2
```

3.0.2 size

[42]:
```
a=np.array([[1,2,3,4],[5,6,7,8]])
print(a.size)
```

```
8
```

3.0.3 shape

[44]:
```
a=np.array([[1,2,3,4],[5,6,7,8]])
print(a.shape)
```

```
(2, 4)
```

4 NumPy Input Output

4.0.1 Save & Load

[2]:
```
import numpy as np
a=[[1,3,5],[7,9,11]]
np.array([[1,3,5],[7,9,11]])
np.save('D:\hwm\sample.npy',a)
```

[3]:
```
b=np.load('sample.npy')
print(b)
```

```
[[ 1  3  5]
 [ 7  9 11]]
```

4.0.2 savetxt() & loadtxt()

[9]:
```
a=[[1,3,5],[7,9,11]]
np.array(a)
np.savetxt('D:\hwm\sample1.txt',a)
```

[8]:
```
b=np.loadtxt('D:\hwm\sample1.txt')
print(b)
```

```
[[ 1.  3.  5.]
 [ 7.  9. 11.]]
```

[ ]:
```

```