03-Numpy

December 10, 2020

1 Numpy

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

[2]:
```
# Crear lista
lx = [1,2,3,4,5,6,7,8]
lx
```

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

[3]:
```
x = np.array(lx)
x
```

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

[4]:
```
y = np.array(lx, dtype="float32")
y
```

[4]:
```
array([1., 2., 3., 4., 5., 6., 7., 8.], dtype=float32)
```

[6]:
```
np.zeros((3,4))
```

[6]:
```
array([[0., 0., 0., 0.],
       [0., 0., 0., 0.],
       [0., 0., 0., 0.]])
```

[7]:
```
np.ones((4,3))
```

[7]:
```
array([[1., 1., 1.],
       [1., 1., 1.],
       [1., 1., 1.],
       [1., 1., 1.]])
```

[8]:
```
np.arange(10)
```

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

[10]:
```
np.arange(1,12,dtype=np.float)
```

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

[11]:
```
np.arange(5,12)
```

[11]:
```
array([ 5,  6,  7,  8,  9, 10, 11])
```

[12]:
```
np.arange(4,5,0.1)
```

[12]:
```
array([4. , 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9])
```

[13]:
```
np.linspace(1,7,12)
```

[13]:
```
array([1.        , 1.54545455, 2.09090909, 2.63636364, 3.18181818,
       3.72727273, 4.27272727, 4.81818182, 5.36363636, 5.90909091,
       6.45454545, 7.        ])
```

[14]:
```
np.eye(5)
```

[14]:
```
array([[1., 0., 0., 0., 0.],
       [0., 1., 0., 0., 0.],
       [0., 0., 1., 0., 0.],
       [0., 0., 0., 1., 0.],
       [0., 0., 0., 0., 1.]])
```

[18]:
```
x = np.zeros((8,3))
x
```

[18]:
```
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.]])
```

[20]:
```
x = x.reshape((6,4))
x
```

[20]:
```
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.]])
```

[21]:
```
x = np.arange(24)
x
```

[21]:
```
array([ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9, 10, 11, 12, 13, 14, 15, 16,
       17, 18, 19, 20, 21, 22, 23])
```

[22]:
```
x.reshape((6,4))
```

[22]:
```
array([[ 0,  1,  2,  3],
       [ 4,  5,  6,  7],
       [ 8,  9, 10, 11],
       [12, 13, 14, 15],
       [16, 17, 18, 19],
       [20, 21, 22, 23]])
```

2 Ejercicios

1. Crear un array de datos con valores entre 5 y 120
2. Crear una matriz 4x4 con los valores desde 0 hasta 15
3. Crear la matriz identidad 7x7
4. Crear un array de 20 elementos y transformarlos en una matriz de 5x4
5. Crear un array con 20 elementos con los valores entre 0 y 5 espaciados de manera uniforme

[23]:
```
# Ejercicio 1
lx = np.array(range(5,120))
lx
```

[23]:
```
array([  5,   6,   7,   8,   9,  10,  11,  12,  13,  14,  15,  16,  17,
        18,  19,  20,  21,  22,  23,  24,  25,  26,  27,  28,  29,  30,
        31,  32,  33,  34,  35,  36,  37,  38,  39,  40,  41,  42,  43,
        44,  45,  46,  47,  48,  49,  50,  51,  52,  53,  54,  55,  56,
        57,  58,  59,  60,  61,  62,  63,  64,  65,  66,  67,  68,  69,
        70,  71,  72,  73,  74,  75,  76,  77,  78,  79,  80,  81,  82,
        83,  84,  85,  86,  87,  88,  89,  90,  91,  92,  93,  94,  95,
        96,  97,  98,  99, 100, 101, 102, 103, 104, 105, 106, 107, 108,
       109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119])
```

[24]:
```
# Ejercicio 2
mx = np.arange(0,16)
mx.resize((4,4))
mx
```

[24]:
```
array([[ 0,  1,  2,  3],
       [ 4,  5,  6,  7],
       [ 8,  9, 10, 11],
       [12, 13, 14, 15]])
```

[26]:
```
# Ejercicio 2 - Version Jorge
mx = np.arange(0,16)
mx = mx.reshape((4,4))
mx
```

[26]:
```
array([[ 0,  1,  2,  3],
       [ 4,  5,  6,  7],
       [ 8,  9, 10, 11],
       [12, 13, 14, 15]])
```

[27]:
```
# Ejercicio 3
np.eye(7)
```

[27]:
```
array([[1., 0., 0., 0., 0., 0., 0.],
       [0., 1., 0., 0., 0., 0., 0.],
       [0., 0., 1., 0., 0., 0., 0.],
       [0., 0., 0., 1., 0., 0., 0.],
       [0., 0., 0., 0., 1., 0., 0.],
       [0., 0., 0., 0., 0., 1., 0.],
       [0., 0., 0., 0., 0., 0., 1.]])
```

[28]:
```
# Ejercicio 4
mx = np.arange(0,21)
mx.resize((5,4))
mx
```

[28]:
```
array([[ 0,  1,  2,  3],
       [ 4,  5,  6,  7],
       [ 8,  9, 10, 11],
       [12, 13, 14, 15],
       [16, 17, 18, 19]])
```

[29]:
```
# Ejercicio 5
np.arange(0,5,0.25)
```

[29]:
```
array([0.  , 0.25, 0.5 , 0.75, 1.  , 1.25, 1.5 , 1.75, 2.  , 2.25, 2.5 ,
       2.75, 3.  , 3.25, 3.5 , 3.75, 4.  , 4.25, 4.5 , 4.75])
```

[30]:
```
np.linspace(0,5,20)
```

[30]:
```
array([0.        , 0.26315789, 0.52631579, 0.78947368, 1.05263158,
       1.31578947, 1.57894737, 1.84210526, 2.10526316, 2.36842105,
       2.63157895, 2.89473684, 3.15789474, 3.42105263, 3.68421053,
       3.94736842, 4.21052632, 4.47368421, 4.73684211, 5.        ])
```

[ ]: