

스칼라(0D 텐서)

In [1]:

```
import numpy as np
x = np.array(12)
```

In [2]:

```
print(x)
x.ndim
```

12

Out[2]:

0

벡터(1D 텐서)

In [3]:

```
x = np.array([12,3,6,14,7])
```

In [5]:

```
print(x)
x.ndim
```

[12 3 6 14 7]

Out[5]:

1

행렬(2D 텐서)

In [6]:

```
x = np.array([[5,78,2,34,0],
              [6,79,3,35,1],
              [7,80,4,36,2]])
```

In [8]:

```
print(x)
x.ndim
```

```
[[ 5 78  2 34  0]
 [ 6 79  3 35  1]
 [ 7 80  4 36  2]]
```

Out[8]:

2

3D 텐서와 고차원 텐서

In [10]:

```
x = np.array([[[[5,78,2,34,0],
                 [6,79,3,35,1],
                 [7,80,4,36,2]],
                [[5,78,2,34,0],
                 [6,79,3,35,1],
                 [7,80,4,36,2]],
                [[5,78,2,34,0],
                 [6,79,3,35,1],
                 [7,80,4,36,2]]]])
```

In [11]:

```
print(x)
x.ndim
```

```
[[[ 5 78  2 34  0]
   [ 6 79  3 35  1]
   [ 7 80  4 36  2]]
```

```
[[ 5 78  2 34  0]
 [ 6 79  3 35  1]
 [ 7 80  4 36  2]]
```

```
[[ 5 78  2 34  0]
 [ 6 79  3 35  1]
 [ 7 80  4 36  2]]]
```

Out[11]:

3

In [12]:

```
from keras.datasets import mnist
```

```
(train_images, train_labels), (test_images, test_labels) = mnist.load_data()
```

Using TensorFlow backend.

C:\Users\WJW\Anaconda3\lib\importlib_bootstrap.py:219: RuntimeWarning: numpy.ufunc size changed, may indicate binary incompatibility. Expected 192 from C header, got 216 from PyObject

return f(*args, **kwargs)

C:\Users\WJW\Anaconda3\lib\importlib_bootstrap.py:219: RuntimeWarning: numpy.ufunc size changed, may indicate binary incompatibility. Expected 192 from C header, got 216 from PyObject

return f(*args, **kwargs)

C:\Users\WJW\Anaconda3\lib\importlib_bootstrap.py:219: RuntimeWarning: numpy.ufunc size changed, may indicate binary incompatibility. Expected 192 from C header, got 216 from PyObject

return f(*args, **kwargs)

C:\Users\WJW\Anaconda3\lib\importlib_bootstrap.py:219: RuntimeWarning: numpy.ufunc size changed, may indicate binary incompatibility. Expected 192 from C header, got 216 from PyObject

return f(*args, **kwargs)

In [14]:

```
print(train_images.ndim, train_images.shape, train_images.dtype)
```

3 (60000, 28, 28) uint8

In [16]:

```
my_slice = train_images[10:100]  
print(my_slice.shape)  
my_slice = train_images[10:100,:,:)   
print(my_slice.shape)  
my_slice = train_images[10:100,0:28,0:28]  
print(my_slice.shape)
```

(90, 28, 28)

(90, 28, 28)

(90, 28, 28)