```
import tensorflow as tf
```

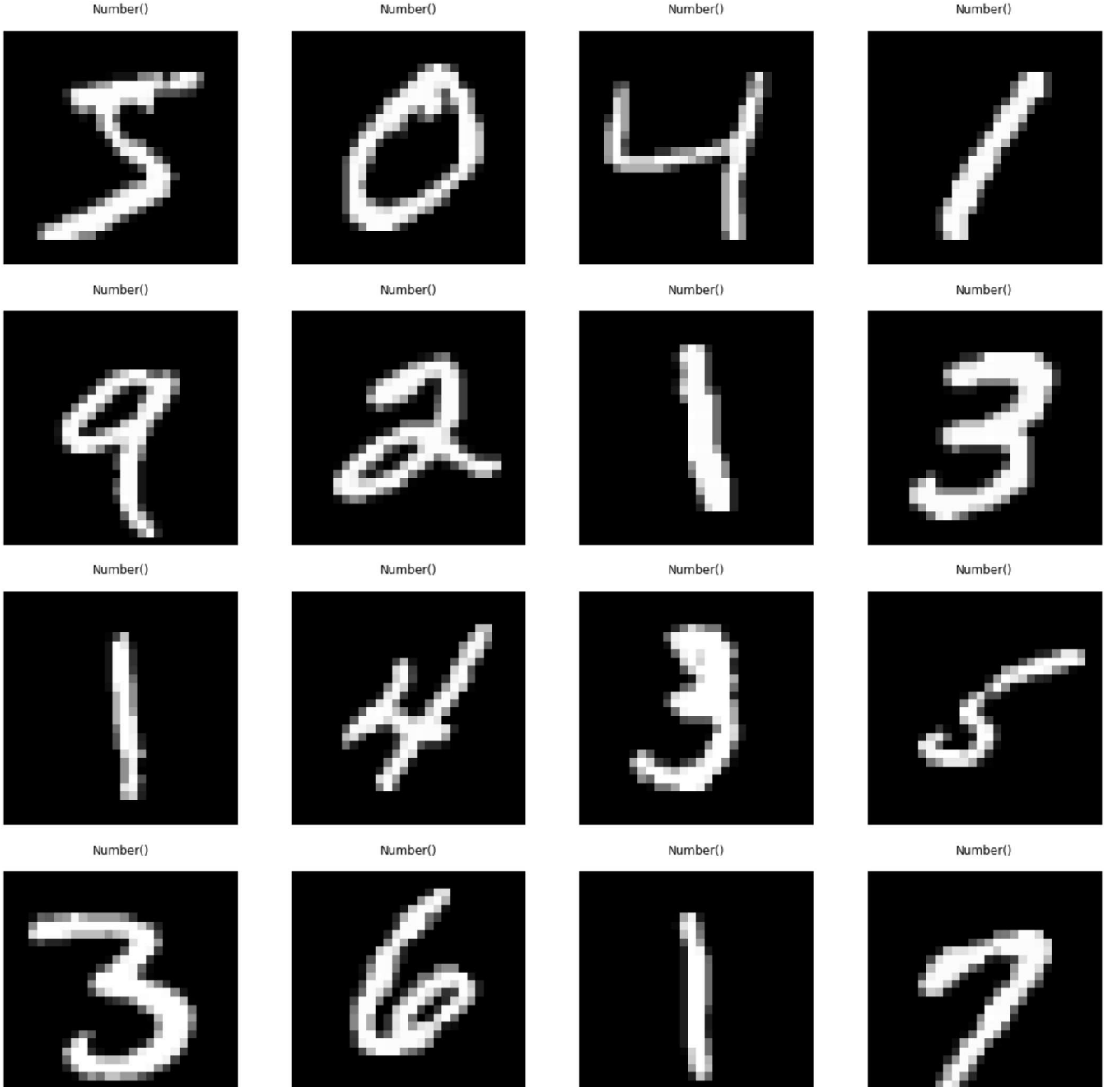
```
(x_train,y_train),(x_test,y_test)=tf.keras.datasets.mnist.load_data()
```

```
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist
11490434/11490434 [==============================] - 0s 0us/step
```

```
x_train.shape
```

```
(60000, 28, 28)
```

```
from io import IncrementalNewlineDecoder
import matplotlib.pyplot as plt
%matplotlib inline
fig,axes=plt.subplots(4,4,figsize=(20,20))
plt.gray()
for i,ax in enumerate(axes.flat):
  ax.matshow(x_train[i])
  ax.axis('off')
  ax.set_title('Number()'.format(y_train[i]))
fig.show()
```




```
x_train=x_train.reshape(x_train.shape[0],28,28,1)
x_test=x_test.reshape(x_test.shape[0],28,28,1)
input_shape=(28,28,1)
```

```
x_train=x_train.astype('float32')
x_test=x_test.astype('float32')
x_train /=255
x_test /=255
print('x_train_shape:',x_train.shape)
print('no of image in x train',x_train.shape[0])
print('no of image in x test',x_test.shape[0])
```

```
x_train_shape: (60000, 28, 28, 1)
no of image in x train 60000
```

```
no of image in x test 10000
```

```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense,Conv2D,Flatten,MaxPool2D,Dropout


model=Sequential()
model.add(Conv2D(28,kernel_size=(3,3),input_shape=input_shape))
model.add(MaxPool2D(pool_size=(2,2)))
model.add(Flatten())
model.add(Dense(128,activation=tf.nn.relu))
model.add(Dropout(0.2))
model.add(Dense(10,activation=tf.nn.softmax))


model.compile(optimizer='adam',loss='sparse_categorical_crossentropy',metrics=['accuracy'])
model.fit(x=x_train,y=y_train,epochs=1)
```

```
1875/1875 [==============================] - 37s 20ms/step - loss: 0.2093 - accuracy: 0
<keras.callbacks.History at 0x7f9af4fe80d0>
```

```
model.evaluate(x_test,y_test)
```

```
313/313 [==============================] - 3s 9ms/step - loss: 0.0939 - accuracy: 0.9726
[0.09389693289995193, 0.972000002861023]
```