```
import tensorflow as tf
from tensorflow.keras import layers, models
from tensorflow.keras.datasets import fashion_mnist
import matplotlib.pyplot as plt


(x_train, y_train), (x_test, y_test) = fashion_mnist.load_data()


x_train = x_train.reshape((x_train.shape[0], 28 * 28)).astype('float32') / 255
x_test = x_test.reshape((x_test.shape[0], 28 * 28)).astype('float32') / 255


model = models.Sequential()
model.add(layers.Dense(512, activation='relu', input_shape=(28 * 28,)))
model.add(layers.Dense(512, activation='relu'))
model.add(layers.Dense(128, activation='relu'))
model.add(layers.Dense(128, activation='relu'))
model.add(layers.Dense(64, activation='relu'))
model.add(layers.Dense(32, activation='relu'))
model.add(layers.Dense(10, activation='softmax'))
```

```
/usr/local/lib/python3.11/dist-packages/keras/src/layers/core/dense.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` ar
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

```
model.compile(optimizer='adam',
              loss='sparse_categorical_crossentropy',
              metrics=['accuracy'])


history = model.fit(x_train, y_train, epochs=2, batch_size=32, validation_data=(x_test, y_test))
```

```
Epoch 1/2
1875/1875 ━━━━━━━━━━━━━━━━━━━━ 28s 14ms/step - accuracy: 0.7545 - loss: 0.6839 - val_accuracy: 0.8504 - val_loss: 0.4147
Epoch 2/2
1875/1875 ━━━━━━━━━━━━━━━━━━━━ 39s 13ms/step - accuracy: 0.8616 - loss: 0.3855 - val_accuracy: 0.8497 - val_loss: 0.4117
```

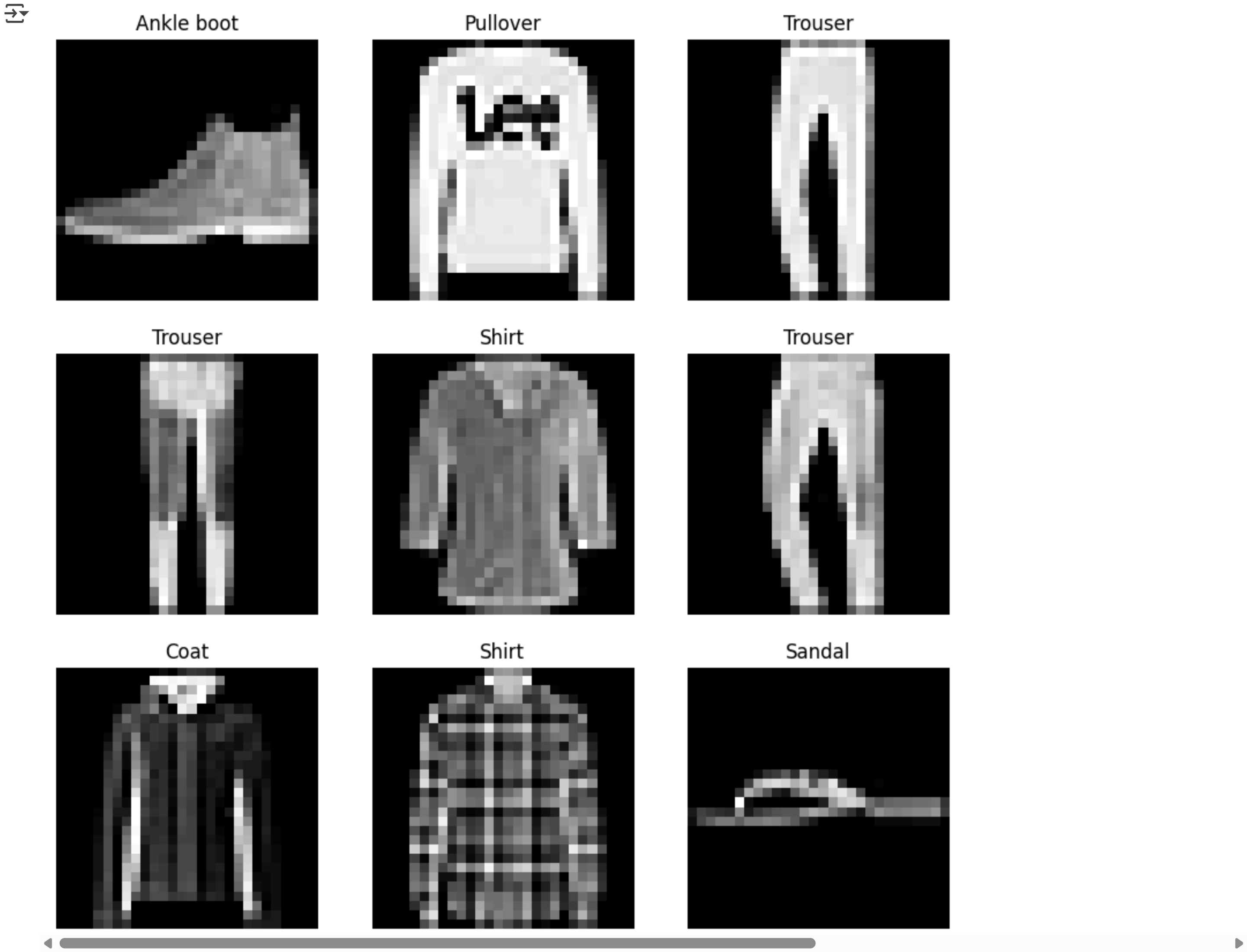
```
test_loss, test_accuracy = model.evaluate(x_test, y_test, verbose=2)
print(f'\nTest accuracy: {test_accuracy}')
```

```
313/313 - 1s - 3ms/step - accuracy: 0.8497 - loss: 0.4117

Test accuracy: 0.8496999740600586
```

```
class_names = ['T-shirt/top', 'Trouser', 'Pullover', 'Dress', 'Coat', 'Sandal', 'Shirt', 'Sneaker', 'Bag', 'Ankle boot']

plt.figure(figsize=(10, 10))
for i in range(9):
    plt.subplot(3, 3, i + 1)
    plt.imshow(x_test[i].reshape(28, 28), cmap='gray')
    plt.title(class_names[y_test[i]])
    plt.axis('off')
plt.show()
```


Ankle boot
Pullover
Trouser
Trouser
Shirt
Trouser
Coat
Shirt
Sandal