Prac 11

import tensorflow as tf

from tensorflow.keras.dataset import mnist

from tensorflow.keras.layers import Dense,Flatten

from tensorflow.keras.models import Sequential

from tensorflow.keras.optimizers import Adam

#load dataset

(x\_train,y\_train),(x\_test,y\_test)=mnist.load\_data()

#preprocess the data

x\_train=x\_train/255.0

x\_test=x\_test/255.0

#reshape

x\_train=x\_train.reshape((x\_train.shape[0],-1))

x\_test=x\_test.reshape((x\_test.shape[0],-1))

#define the logistic regression model

logistic\_model=Sequential([Dense(10,activation='softmax',input\_shape=(784,))])

#compile

logistic\_model.compile(optimizer=Adam(learning\_rate=0.001),loss='sparse\_categorical\_crossentropy',metrics=['accuracy'])

#train

logistic\_model.fit(x\_train,y\_train,validation\_split=0.1,epochs=10,batch\_size=32)

#evaluate

test\_loss,test\_acc=logistic\_model.evaluate(x\_test,y\_test)

print(f'Logistic regression test loss:{test\_loss:.4f},test accuracy:{test\_acc:.4f}')