import numpy as np  
import tensorflow as tf  
from tensorflow.keras.datasets import cifar10  
import matplotlib.pyplot as plt  
*# 下载和加载CIFAR-10数据集*(x\_train, y\_train), (x\_test, y\_test) = cifar10.load\_data()  
  
*# 猫的标签是3*cat\_train = x\_train[y\_train.flatten() == 3][0:150]  
cat\_test = x\_test[y\_test.flatten() == 3][0:50]  
print(cat\_train.shape)  
print(cat\_test.shape)  
*# 非猫的标签选择为5*not\_cat\_train = x\_train[y\_train.flatten() == 0][0:150]  
not\_cat\_test = x\_test[y\_test.flatten() == 0][0:50]  
print(not\_cat\_train.shape)  
print(not\_cat\_test.shape)  
*# 创建猫和非猫的标签，猫为1，非猫为0*y\_cat\_train = np.ones(len(cat\_train))  
y\_cat\_test = np.ones(len(cat\_test))  
y\_not\_cat\_train = np.zeros(len(not\_cat\_train))  
y\_not\_cat\_test = np.zeros(len(not\_cat\_test))  
  
*# 展平图片数据*cat\_train\_flat = cat\_train.reshape(len(cat\_train), -1)  
cat\_test\_flat = cat\_test.reshape(len(cat\_test), -1)  
not\_cat\_train\_flat = not\_cat\_train.reshape(len(not\_cat\_train), -1)  
not\_cat\_test\_flat = not\_cat\_test.reshape(len(not\_cat\_test), -1)  
  
*# 合并猫和非猫的数据*X\_train = np.vstack([cat\_train\_flat, not\_cat\_train\_flat])  
X\_test = np.vstack([cat\_test\_flat, not\_cat\_test\_flat])  
  
*# 合并猫和非猫的标签*y\_train = np.concatenate([y\_cat\_train, y\_not\_cat\_train])  
y\_test = np.concatenate([y\_cat\_test, y\_not\_cat\_test])  
print(y\_test)  
  
*# 添加常数项（截距项）*X\_train = np.hstack([np.ones((X\_train.shape[0], 1)), X\_train]) /255  
X\_test = np.hstack([np.ones((X\_test.shape[0], 1)), X\_test]) /255