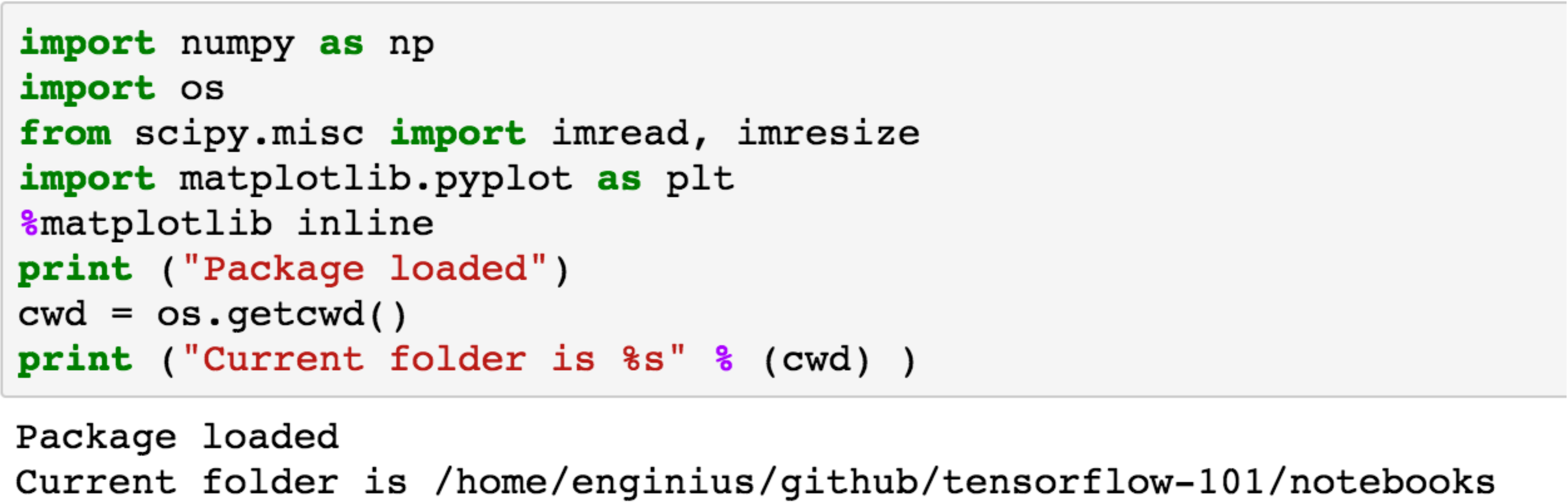
Generate your own dataset

Basic data set generation



```python
import numpy as np
import os
from scipy.misc import imread, imresize
import matplotlib.pyplot as plt
%matplotlib inline
print ("Package loaded")
cwd = os.getcwd()
print ("Current folder is %s" % (cwd) )
```

```
Package loaded
Current folder is /home/enginius/github/tensorflow-101/notebooks
```

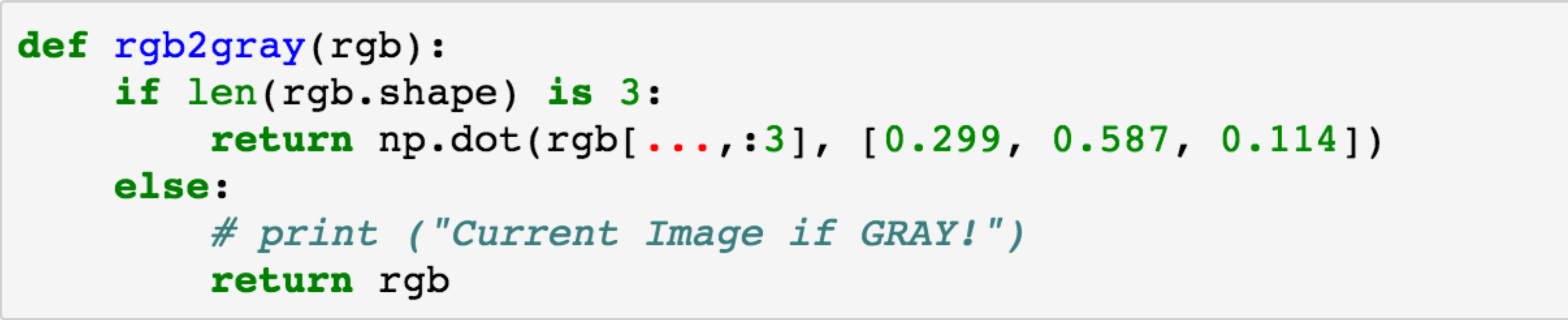
SPECIFY THE FOLDER PATHS

+ RESHAPE SIZE + GRAYSCALE

```
# Training set folder
paths = {"../../img_dataset/celebs/Arnold_Schwarzenegger"
        , "../../img_dataset/celebs/Junichiro_Koizumi"
        , "../../img_dataset/celebs/Vladimir_Putin"
        , "../../img_dataset/celebs/George_W_Bush"}
# The reshape size
imgsize = [64, 64]
# Grayscale
use_gray = 1
# Save name
data_name = "custom_data"

print ("Your images should be at")
for i, path in enumerate(paths):
    print (" [%d/%d] %s/%s" % (i, len(paths), cwd, path))

print ("Data will be saved to %s"
       % (cwd + '/data/' + data_name + '.npz'))
```

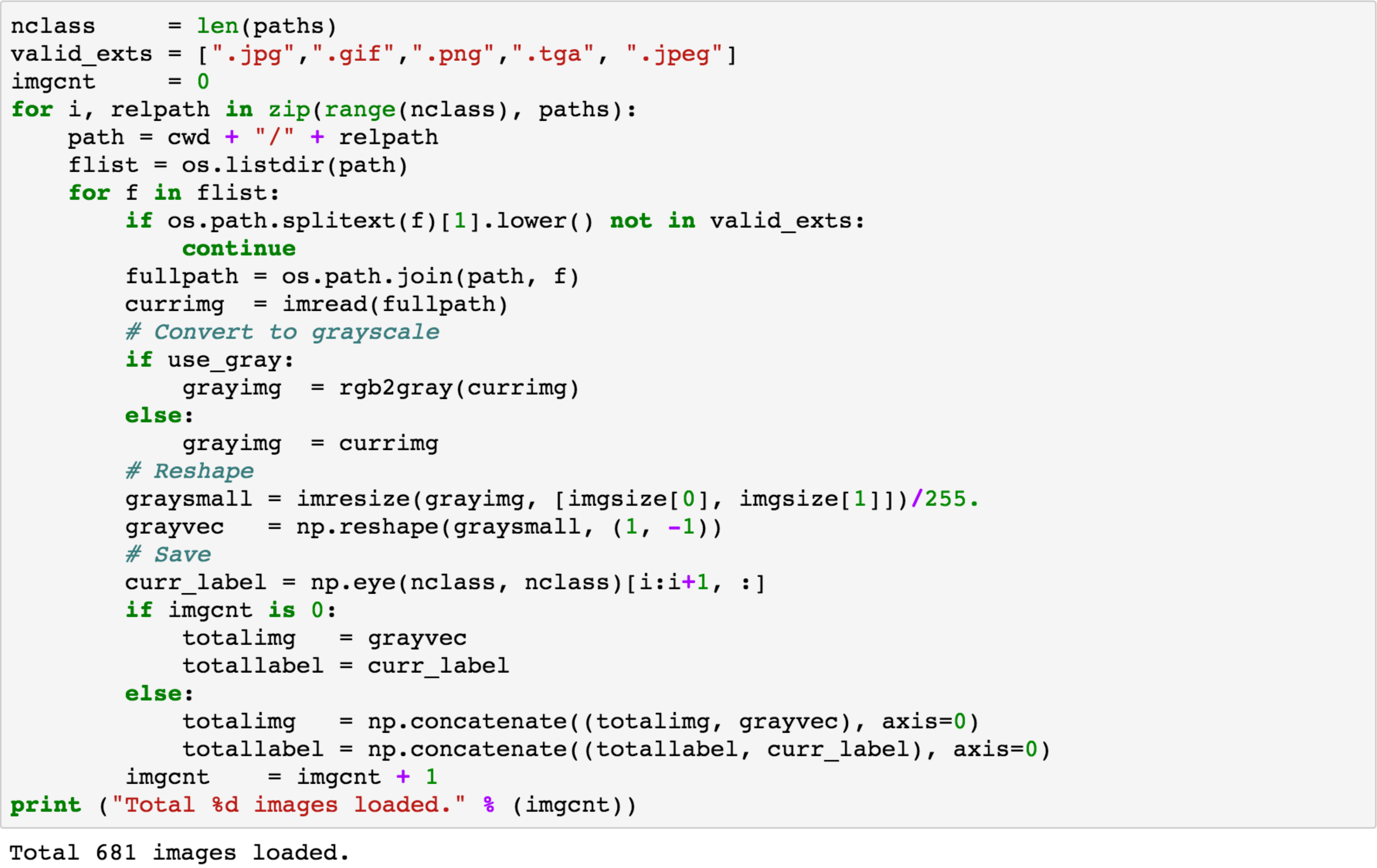
```
Your images should be at
 [0/4] /home/enginius/github/tensorflow-101/notebooks/../../img_dataset/celebs/George_W_Bush
 [1/4] /home/enginius/github/tensorflow-101/notebooks/../../img_dataset/celebs/Arnold_Schwarz
enegger
 [2/4] /home/enginius/github/tensorflow-101/notebooks/../../img_dataset/celebs/Junichiro_Koiz
umi
 [3/4] /home/enginius/github/tensorflow-101/notebooks/../../img_dataset/celebs/Vladimir_Putin
Data will be saved to /home/enginius/github/tensorflow-101/notebooks/data/custom_data.npz
```

RGB 2 GRAY FUNCTION



```
def rgb2gray(rgb):
    if len(rgb.shape) is 3:
        return np.dot(rgb[...,:3], [0.299, 0.587, 0.114])
    else:
        # print ("Current Image if GRAY!")
        return rgb
```

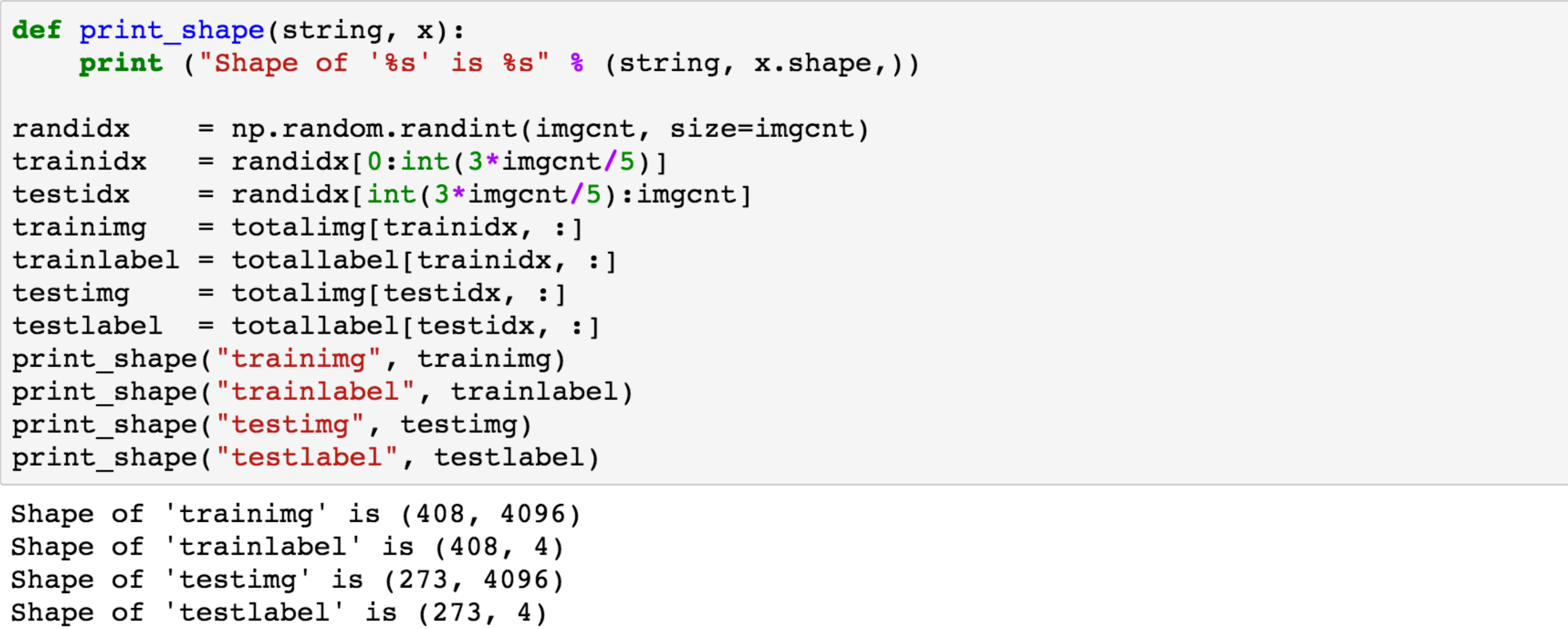
LOAD IMAGES



```python
nclass     = len(paths)
valid_exts = [".jpg",".gif",".png",".tga", ".jpeg"]
imgcnt     = 0
for i, relpath in zip(range(nclass), paths):
    path = cwd + "/" + relpath
    flist = os.listdir(path)
    for f in flist:
        if os.path.splitext(f)[1].lower() not in valid_exts:
            continue
        fullpath = os.path.join(path, f)
        currimg  = imread(fullpath)
        # Convert to grayscale
        if use_gray:
            grayimg  = rgb2gray(currimg)
        else:
            grayimg  = currimg
        # Reshape
        graysmall = imresize(grayimg, [imgsize[0], imgsize[1]])/255.
        grayvec   = np.reshape(graysmall, (1, -1))
        # Save
        curr_label = np.eye(nclass, nclass)[i:i+1, :]
        if imgcnt is 0:
            totalimg   = grayvec
            totallabel = curr_label
        else:
            totalimg   = np.concatenate((totalimg, grayvec), axis=0)
            totallabel = np.concatenate((totallabel, curr_label), axis=0)
        imgcnt    = imgcnt + 1
print ("Total %d images loaded." % (imgcnt))
```

```
Total 681 images loaded.
```

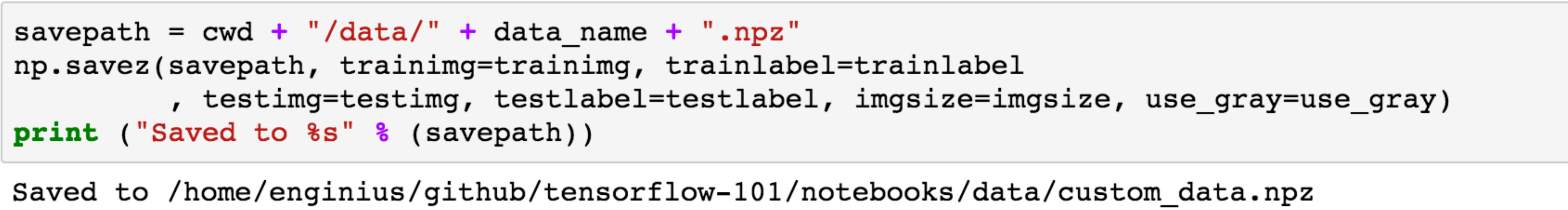
DIVIDE TOTAL DATA INTO TRAINING AND TEST SET



```
def print_shape(string, x):
    print ("Shape of '%s' is %s" % (string, x.shape,))

randidx    = np.random.randint(imgcnt, size=imgcnt)
trainidx   = randidx[0:int(3*imgcnt/5)]
testidx    = randidx[int(3*imgcnt/5):imgcnt]
trainimg   = totalimg[trainidx, :]
trainlabel = totallabel[trainidx, :]
testimg    = totalimg[testidx, :]
testlabel  = totallabel[testidx, :]
print_shape("trainimg", trainimg)
print_shape("trainlabel", trainlabel)
print_shape("testimg", testimg)
print_shape("testlabel", testlabel)
```

```
Shape of 'trainimg' is (408, 4096)
Shape of 'trainlabel' is (408, 4)
Shape of 'testimg' is (273, 4096)
Shape of 'testlabel' is (273, 4)
```

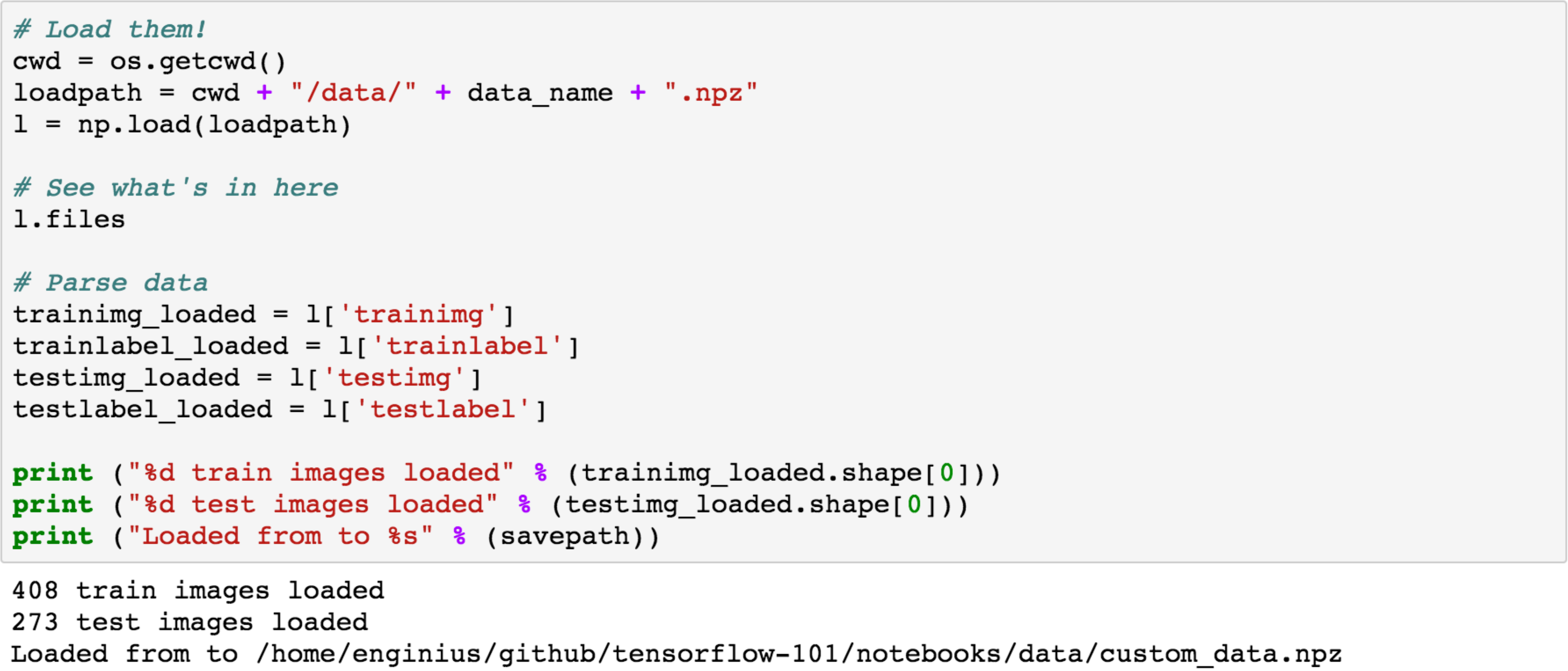
SAVE TO NPZ



```
savepath = cwd + "/data/" + data_name + ".npz"
np.savez(savepath, trainimg=trainimg, trainlabel=trainlabel
         , testimg=testimg, testlabel=testlabel, imgsize=imgsize, use_gray=use_gray)
print ("Saved to %s" % (savepath))
```

```
Saved to /home/enginius/github/tensorflow-101/notebooks/data/custom_data.npz
```

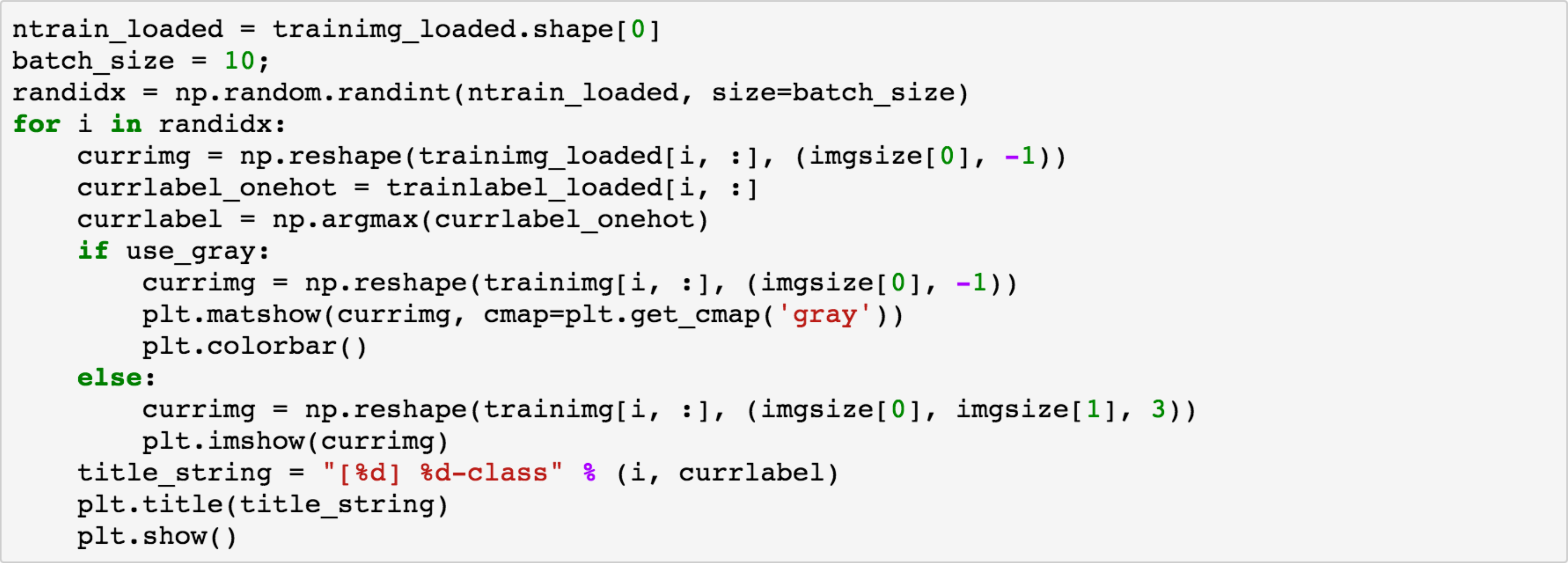
LOAD TO CHECK!



```
# Load them!
cwd = os.getcwd()
loadpath = cwd + "/data/" + data_name + ".npz"
l = np.load(loadpath)

# See what's in here
l.files

# Parse data
trainimg_loaded = l['trainimg']
trainlabel_loaded = l['trainlabel']
testimg_loaded = l['testimg']
testlabel_loaded = l['testlabel']

print ("%d train images loaded" % (trainimg_loaded.shape[0]))
print ("%d test images loaded" % (testimg_loaded.shape[0]))
print ("Loaded from to %s" % (savepath))
```

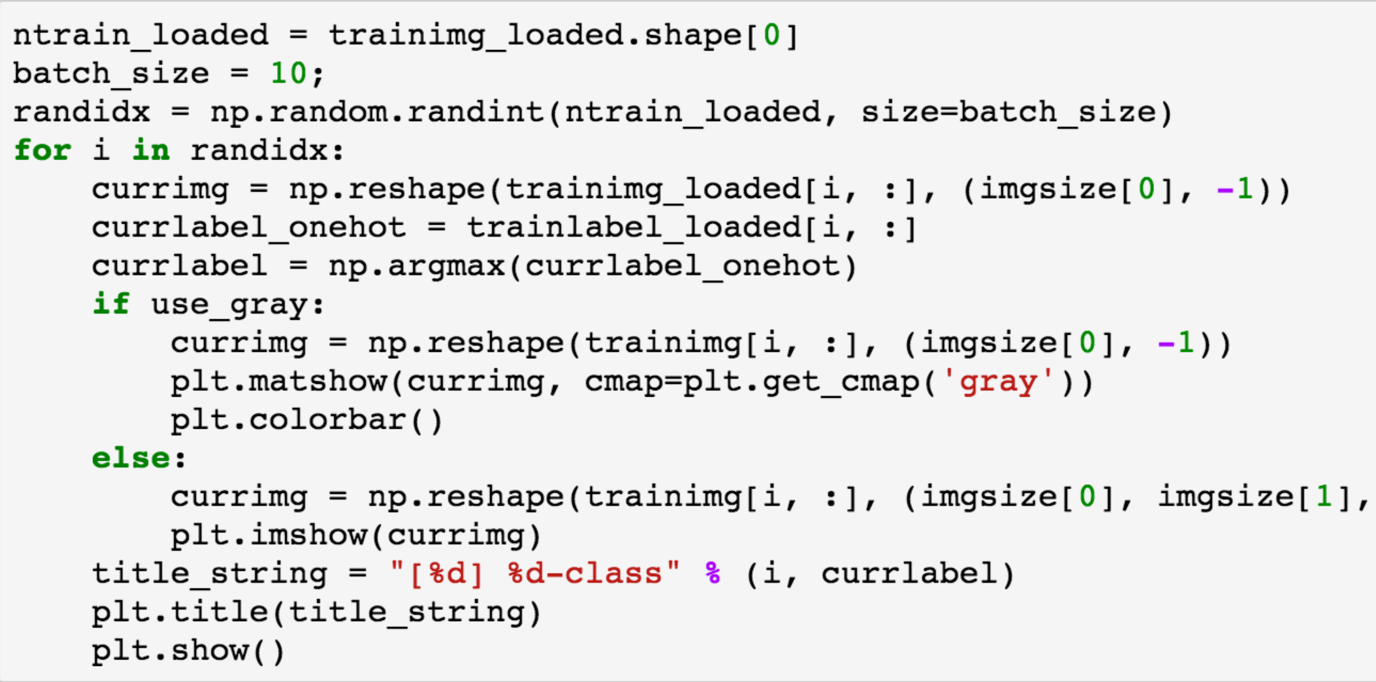
```
408 train images loaded
273 test images loaded
Loaded from to /home/enginius/github/tensorflow-101/notebooks/data/custom_data.npz
```

PLOT RANDOMLY SELECTED TRAIN IMAGES

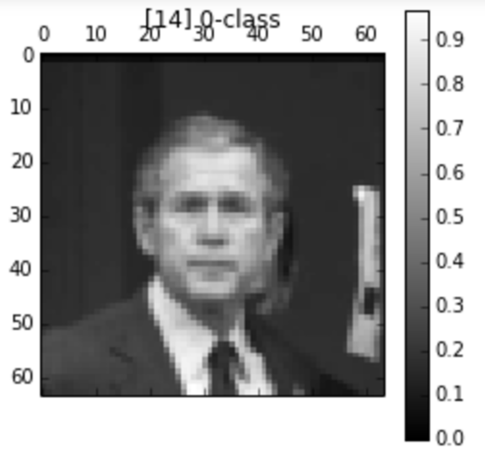


```
ntrain_loaded = trainimg_loaded.shape[0]
batch_size = 10;
randidx = np.random.randint(ntrain_loaded, size=batch_size)
for i in randidx:
    currimg = np.reshape(trainimg_loaded[i, :], (imgsize[0], -1))
    currlabel_onehot = trainlabel_loaded[i, :]
    currlabel = np.argmax(currlabel_onehot)
    if use_gray:
        currimg = np.reshape(trainimg[i, :], (imgsize[0], -1))
        plt.matshow(currimg, cmap=plt.get_cmap('gray'))
        plt.colorbar()
    else:
        currimg = np.reshape(trainimg[i, :], (imgsize[0], imgsize[1], 3))
        plt.imshow(currimg)
    title_string = "[%d] %d-class" % (i, currlabel)
    plt.title(title_string)
    plt.show()
```

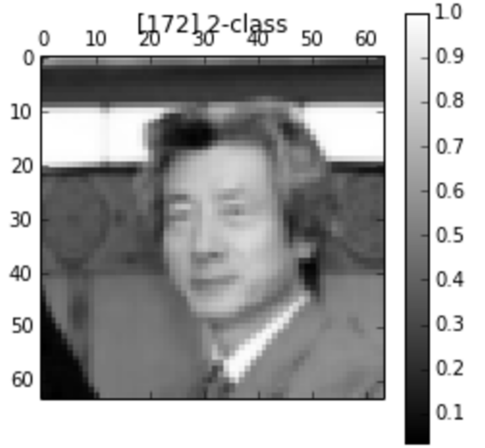
PLOT RANDOMLY SELECTED TRAIN IMAGES



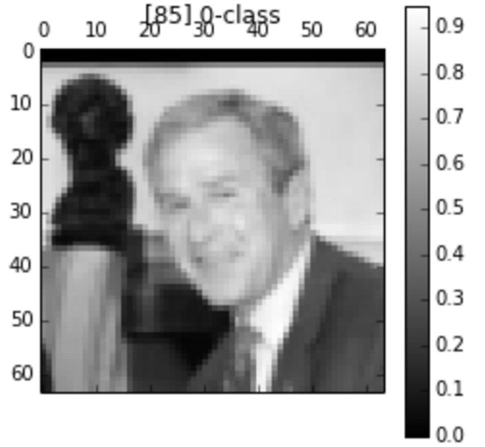
```
ntrain_loaded = trainimg_loaded.shape[0]
batch_size = 10;
randidx = np.random.randint(ntrain_loaded, size=batch_size)
for i in randidx:
    currimg = np.reshape(trainimg_loaded[i, :], (imgsize[0], -1))
    currlabel_onehot = trainlabel_loaded[i, :]
    currlabel = np.argmax(currlabel_onehot)
    if use_gray:
        currimg = np.reshape(trainimg[i, :], (imgsize[0], -1))
        plt.matshow(currimg, cmap=plt.get_cmap('gray'))
        plt.colorbar()
    else:
        currimg = np.reshape(trainimg[i, :], (imgsize[0], imgsize[1],
        plt.imshow(currimg)
    title_string = "[%d] %d-class" % (i, currlabel)
    plt.title(title_string)
    plt.show()
```



[14] 0-class

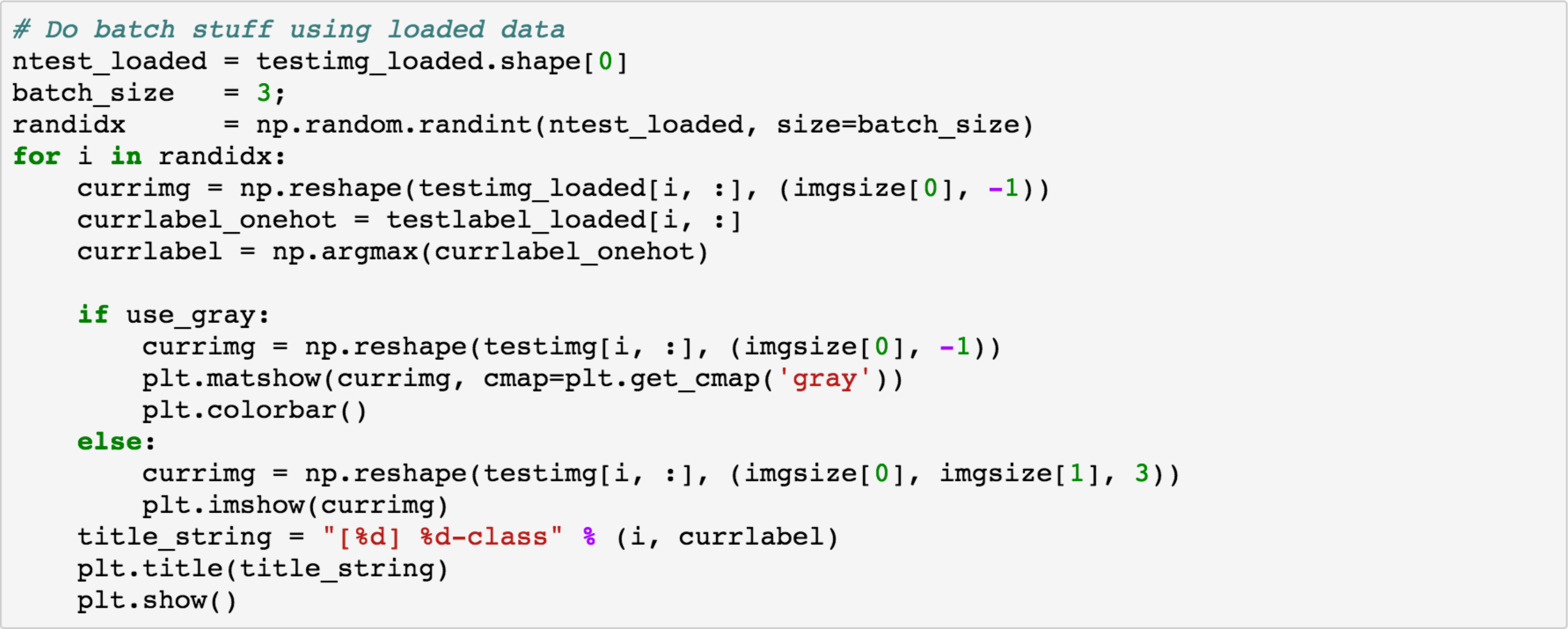


[172] 2-class



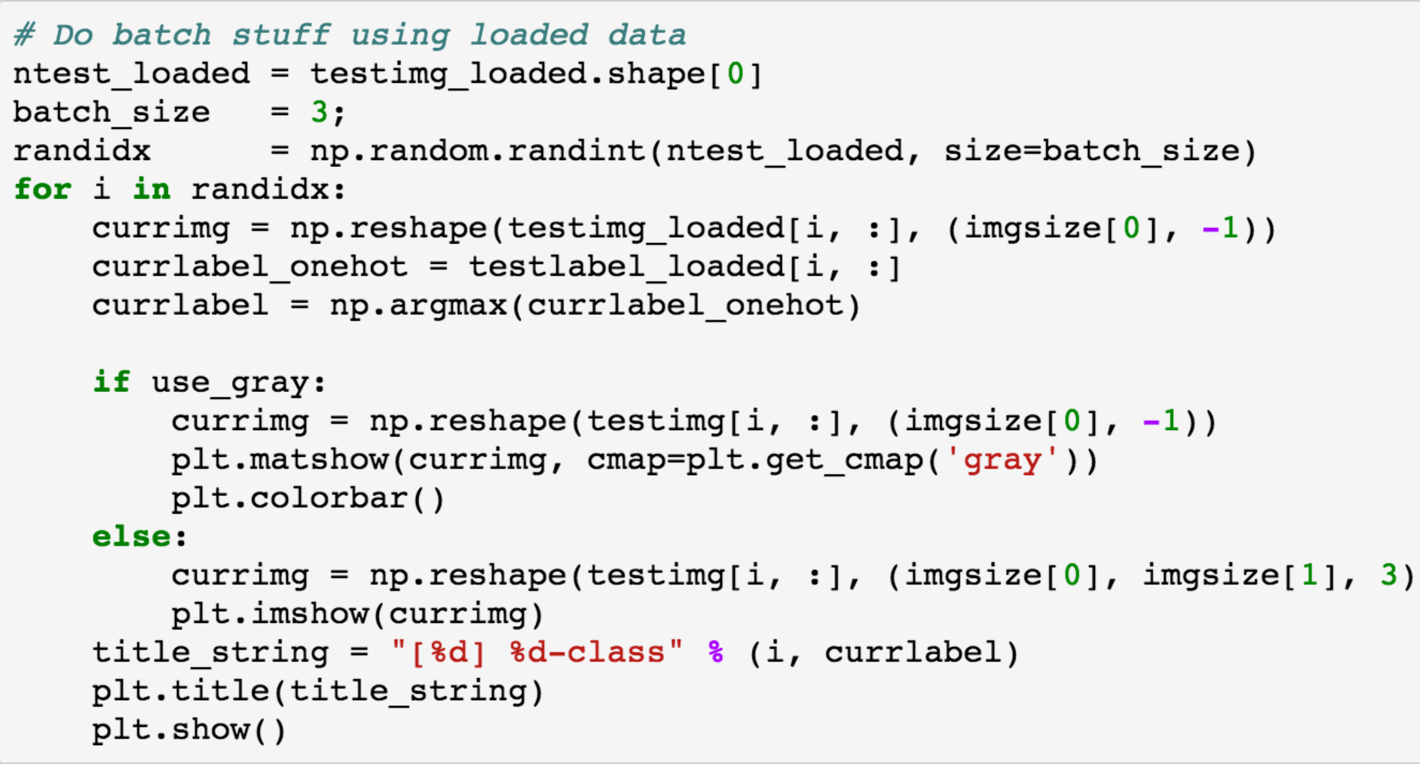
[85] 0-class

PLOT RANDOMLY SELECTED TEST IMAGES



```python
# Do batch stuff using loaded data
ntest_loaded = testimg_loaded.shape[0]
batch_size   = 3;
randidx      = np.random.randint(ntest_loaded, size=batch_size)
for i in randidx:
    currimg = np.reshape(testimg_loaded[i, :], (imgsize[0], -1))
    currlabel_onehot = testlabel_loaded[i, :]
    currlabel = np.argmax(currlabel_onehot)

    if use_gray:
        currimg = np.reshape(testimg[i, :], (imgsize[0], -1))
        plt.matshow(currimg, cmap=plt.get_cmap('gray'))
        plt.colorbar()
    else:
        currimg = np.reshape(testimg[i, :], (imgsize[0], imgsize[1], 3))
        plt.imshow(currimg)
    title_string = "[%d] %d-class" % (i, currlabel)
    plt.title(title_string)
    plt.show()
```

PLOT RANDOMLY SELECTED TEST IMAGES



```python
# Do batch stuff using loaded data
ntest_loaded = testimg_loaded.shape[0]
batch_size   = 3;
randidx      = np.random.randint(ntest_loaded, size=batch_size)
for i in randidx:
    currimg = np.reshape(testimg_loaded[i, :], (imgsize[0], -1))
    currlabel_onehot = testlabel_loaded[i, :]
    currlabel = np.argmax(currlabel_onehot)

    if use_gray:
        currimg = np.reshape(testimg[i, :], (imgsize[0], -1))
        plt.matshow(currimg, cmap=plt.get_cmap('gray'))
        plt.colorbar()
    else:
        currimg = np.reshape(testimg[i, :], (imgsize[0], imgsize[1], 3)
        plt.imshow(currimg)
    title_string = "[%d] %d-class" % (i, currlabel)
    plt.title(title_string)
    plt.show()
```