

```

1. import numpy as np
2. import scipy as sy
3. import scipy.fftpack as syfp
4. import matplotlib.pyplot as plt
5. import random
6.
7. xfourier = np.genfromtxt("D:\\Desktop\\x_values_fourier.csv", delimiter = ',')
8. xvalues = np.genfromtxt("D:\\Desktop\\UCI HAR Dataset\\train\\inertial_signals\\body_acc_x_train.csv", delimiter = ",")
9. yfourier = np.genfromtxt("D:\\Desktop\\y_values_fourier.csv", delimiter = ',')
10. yvalues = np.genfromtxt("D:\\Desktop\\UCI HAR Dataset\\train\\inertial_signals\\body_acc_y_train.csv", delimiter = ",")
11. zfourier = np.genfromtxt("D:\\Desktop\\z_values_fourier.csv", delimiter = ',')
12. zvalues = np.genfromtxt("D:\\Desktop\\UCI HAR Dataset\\train\\inertial_signals\\body_acc_z_train.csv", delimiter = ",")
13. labels = np.genfromtxt("D:\\Desktop\\UCI HAR Dataset\\train\\y_train.txt", delimiter = "\n")
14.
15. labels_dic = { # create a dictionary with the label numbers and corresponding activities
16.     1: "Walking",
17.     2: "Walking upstairs",
18.     3: "Walking downstairs",
19.     4: "Sitting",
20.     5: "Standing",
21.     6: "Laying"
22. }
23.
24. graphed = []
25.
26. length = len(xvalues[0])
27. x = sy.linspace(0.02, length*0.02, num=length)
28. f = syfp.fftfreq(length, np.mean(np.diff(x)))
29.
30. while len(graphed) != 6:
31.     randnum = random.randint(0, len(xvalues))
32.     if ((labels[randnum] == 1) or (labels[randnum] == 2)):
33.         if graphed.count(labels[randnum]) != 3:
34.             graphed.append(labels[randnum])
35.             plt.figure(len(graphed))
36.             plt.suptitle(labels_dic.get(labels[randnum])+' ('+str(randnum)+')')
37.
38.             plt.subplot(2,3,1)
39.             plt.plot(x, xvalues[randnum], 'b-')
40.             plt.title('x-direction')
41.
42.             plt.subplot(2,3,2)
43.             plt.plot(x, yvalues[randnum], 'b-')
44.             plt.title('y-direction')
45.
46.             plt.subplot(2,3,3)
47.             plt.plot(x, zvalues[randnum], 'b-')
48.             plt.title('z-direction')
49.
50.             plt.subplot(2,3,4)
51.             plt.plot(abs(f), xfourier[randnum], 'r-')
52.
53.             plt.subplot(2,3,5)
54.             plt.plot(abs(f), yfourier[randnum], 'r-')
55.
56.             plt.subplot(2,3,6)
57.             plt.plot(abs(f), zfourier[randnum], 'r-')
58.
59. plt.show()

```