**21.How to represent the data set in 3D scatter plot visualization using matplot library in python?**

**Objective:**

* To visualize the sample data set in 3D representation using python.

**Process:**

* Import mpl\_toolkit and related 3D objects from matplot library.
* Read the sample data.
* Initialize the figure object(fig.add\_subplot()).
* Initialize the x,y,z axis.
* Set the x-label,y-label and z-label.

**Input:**

* Data set(sample).

**Output:**

* 3D representation of data set.

**Source code:**

#import 3D tools and objects

from mpl\_toolkits.mplot3d import axes3d

#import matplot library

import matplotlib.pyplot as plt

import pandas as pd

#sample data set

data={'salary':[100,200,300,400,500,400,300,200,100, 50],'

age':[25,26,25,23,30,29,23,23,25,25],

'rating':[4,3.24,2.5,2.25,2,2.25,2.5,2.75,3.2,4.2], 'bonus':[2500,1200,900,3000,1800,1400,850,250,750, 1000]}

#store in a data frame

df=pd.DataFrame(data)

#initialize the figure object

fig = plt.figure()

ax1 = fig.add\_subplot(111, projection='3d')

#passing the variables in to corresponding axis

x = df['salary']

y = df['age']

z = df['bonus']

a = df['rating']

#3D scatter plot

ax1.scatter(x, y, z, c='g', marker='o')

ax1.scatter(x, y, a, c='r', marker='o')

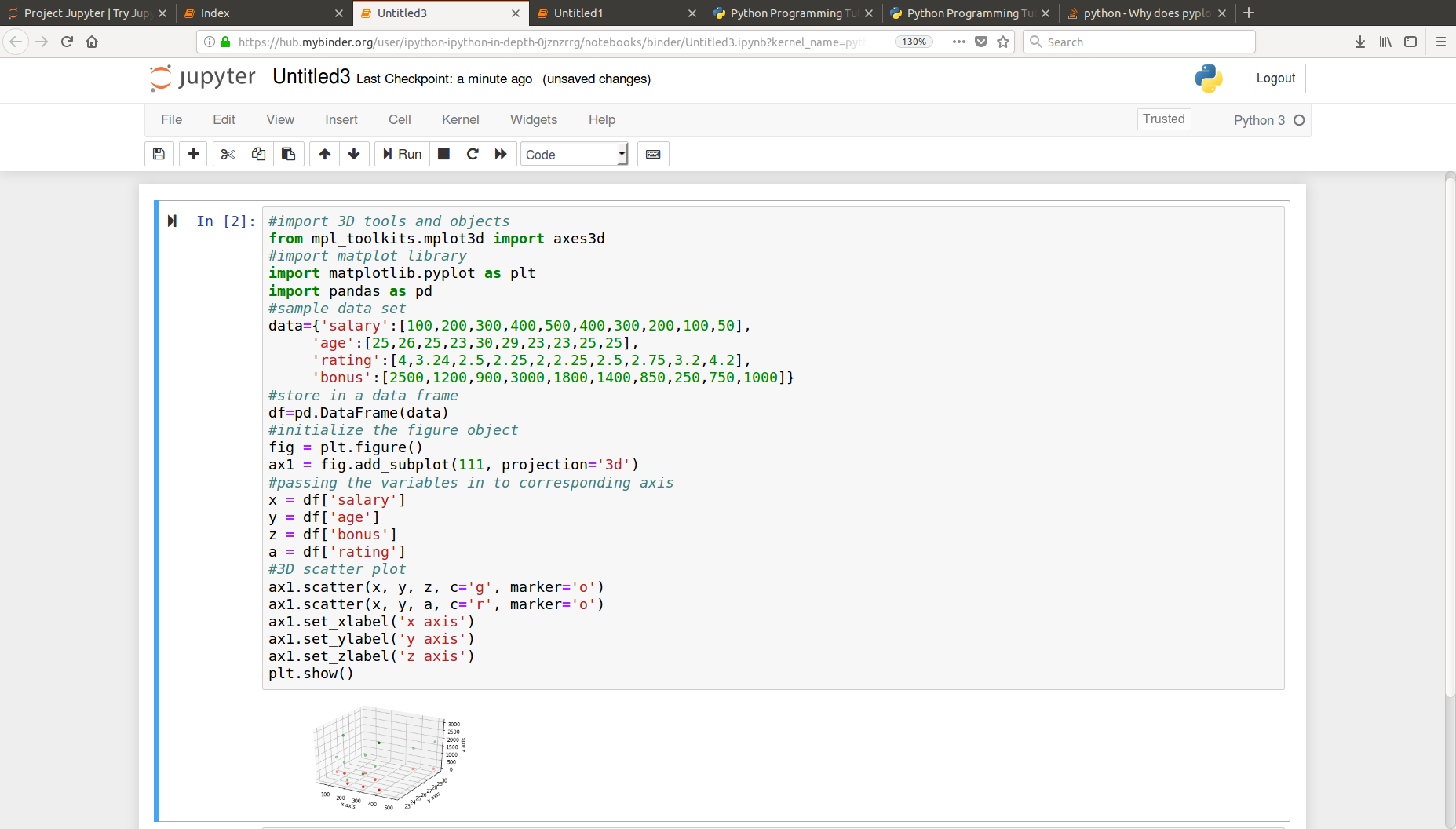
ax1.set\_xlabel('x axis')

ax1.set\_ylabel('y axis')

ax1.set\_zlabel('z axis')

plt.show()

**Screen shot:**

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