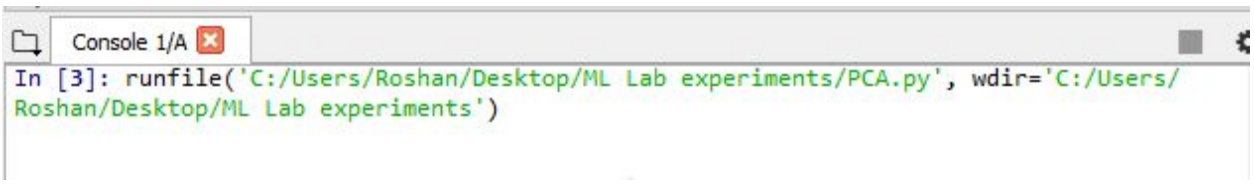
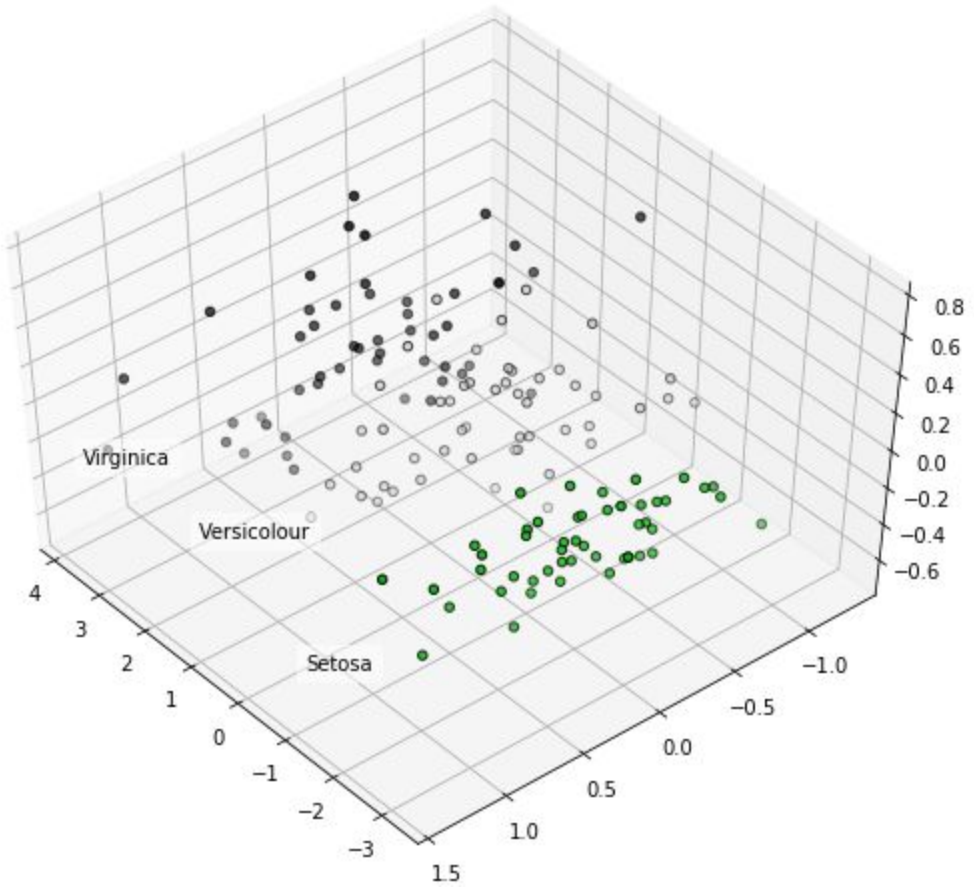
Reg. No.: 15BCE0329
Name: Harshit Kedia
Slot: L19+L20
CSE 4020
Experiment 9

CODE

```
import numpy as np
import matplotlib.pyplot as plt
from mpl_toolkits.mplot3d import Axes3D

from sklearn import decomposition from sklearn import datasets

np.random.seed(5)
centers = [[1, 1], [-1, -1], [1, -1]]
iris = datasets.load_iris()
X = iris.data y = iris.target

fig = plt.figure(1, figsize=(8,6)) plt.clf()
ax = Axes3D(fig, rect=[0, 0, .95, 1], elev=50, azim=140)

plt.cla()
pca = decomposition.PCA(n_components=3) pca.fit(X)

X = pca.transform(X)
for name, label in [('Setosa', 0), ('Versicolour', 1), ('Virginica', 2)]: ax.text3D(X[y == label,
0].mean(),
X[y == label, 1].mean() + 1.5,
X[y == label, 2].mean(), name, horizontalalignment='center',
bbox=dict(alpha=.5, edgecolor='w', facecolor='w')) y = np.choose(y, [1, 2, 0]).astype(np.float)
ax.scatter(X[:, 0], X[:, 1], X[:, 2], c=y, cmap=plt.cm.spectral, edgecolor='k')
plt.show()
```

OUTPUT




Virginica
Versicolour
Setosa
4
3
2
1
0
−1
−2
−3
1.5
1.0
0.5
0.0
−0.5
−1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
−0.6