iris data into 3 dimensions

In [1]:

```
#import Packages
#Converting 4 dimnesional irisdata into 3 dimensional using PCA
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.datasets import load_iris
```

In [2]:

```
#Reading the dataset
iris = load_iris()
ir = pd.DataFrame(iris.data)
ir.columns = iris.feature_names
ir['Target'] = iris.target
ir.head(5)
```

Out[2]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	Target
0	5.1	3.5	1.4	0.2	0
1	4.9	3.0	1.4	0.2	0
2	4.7	3.2	1.3	0.2	0
3	4.6	3.1	1.5	0.2	0
4	5.0	3.6	1.4	0.2	0

In [3]:

```
print (iris.target_names)
```

```
['setosa' 'versicolor' 'virginica']
```

In [4]:

```
#split features and target
X = ir.iloc[:,:-1].values
y = ir.iloc[:,4].values
```

In [5]:

```
#label encoding
from sklearn.preprocessing import LabelEncoder, OneHotEncoder
labelencoder_y = LabelEncoder()
y = labelencoder_y.fit_transform(y)
```

In [6]:

```
y
```

Out[6]:

```
array([0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2,
       2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
       2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2], dtype=int64)
```

In [7]:

```
#feature scaling
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X = sc.fit_transform(X)
```

In [8]:

```
X
```

Out[8]:

```
array([[-9.00681170e-01,  1.01900435e+00, -1.34022653e+00,
        -1.31544430e+00],
       [-1.14301691e+00, -1.31979479e-01, -1.34022653e+00,
        -1.31544430e+00],
       [-1.38535265e+00,  3.28414053e-01, -1.39706395e+00,
        -1.31544430e+00],
       [-1.50652052e+00,  9.82172869e-02, -1.28338910e+00,
        -1.31544430e+00],
       [-1.02184904e+00,  1.24920112e+00, -1.34022653e+00,
        -1.31544430e+00],
       [-5.37177559e-01,  1.93979142e+00, -1.16971425e+00,
        -1.05217993e+00],
       [-1.50652052e+00,  7.88807586e-01, -1.34022653e+00,
        -1.18381211e+00],
       [-1.02184904e+00,  7.88807586e-01, -1.28338910e+00,
        -1.31544430e+00],
       [-1.74885626e+00, -3.62176246e-01, -1.34022653e+00,
```

In [9]:

```
#Reducing the dimensions for 3D
from sklearn.decomposition import PCA
pca = PCA(n_components=3)
X = pca.fit_transform(X)
```

In [10]:

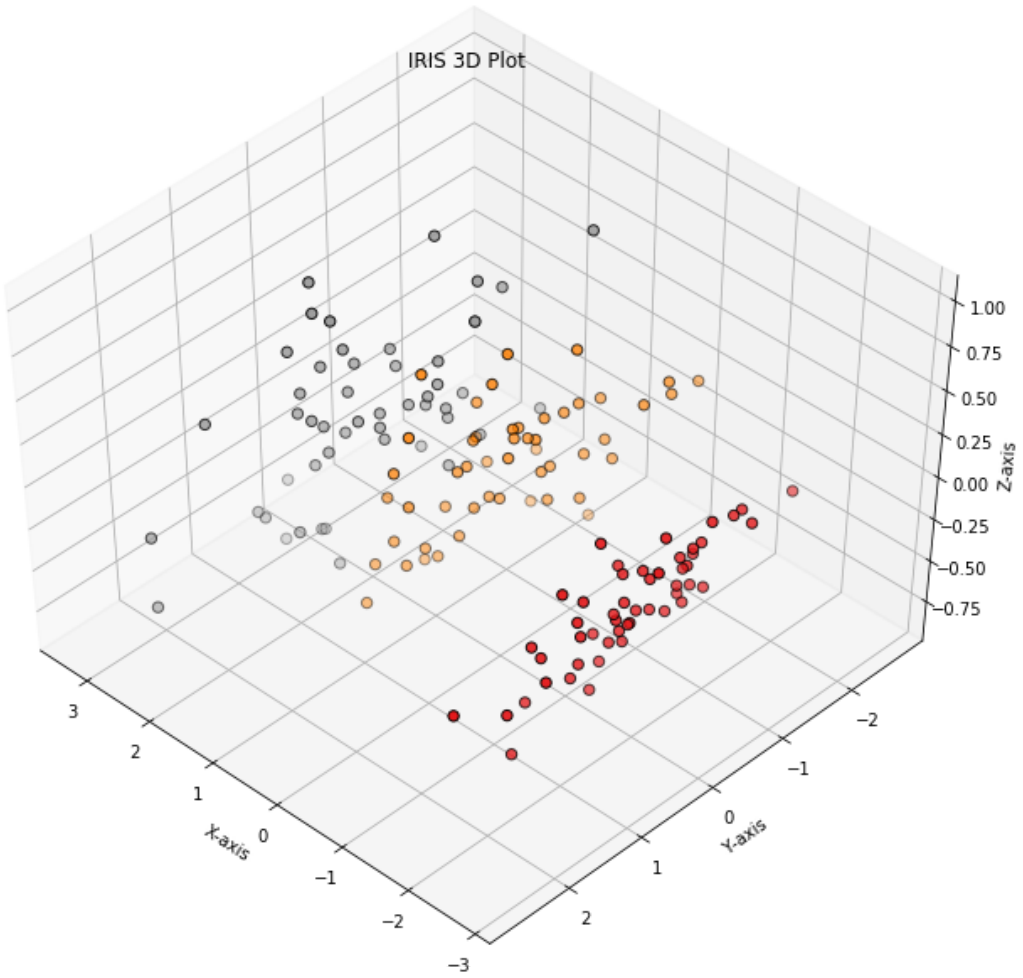
```
#Visualising the 3D chart
from mpl_toolkits.mplot3d import Axes3D


fig = plt.figure(1, figsize=(10, 8))
plt.clf()
ax = Axes3D(fig, rect=[0, 0, .95, 1], elev=48, azim=134)

plt.cla()

# Reorder the labels to have colors matching the cluster results
ax.scatter(X[:, 0], X[:, 1], X[:, 2], c=y, cmap=plt.cm.Set1, edgecolor='k',s=40)
ax.set_title("IRIS 3D Plot")
ax.set_xlabel("X-axis")
ax.set_ylabel("Y-axis")
ax.set_zlabel("Z-axis")

plt.show()
```



In [ ]:

```
```