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**Class:** SYMCA **Div:** B

**Roll No:** 45 **Batch:** B2

**Course:** ML Lab

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**Assignment No: 2**

**Problem Statement:**

Implement Principal Component Analysis (PCA) on a given dataset Iris to reduce its dimensionality while retaining atleast 95% of the variance

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**Code:**

import pandas as pd

import matplotlib.pyplot as plt

from sklearn import datasets

from sklearn.decomposition import PCA

from sklearn.preprocessing import StandardScaler

iris = datasets.load\_iris()

print(iris)

df = pd.DataFrame(iris['data'],columns = iris['feature\_names'])

print(df)

scaler = StandardScaler()

scaler.fit(df)

scaled\_data = scaler.transform(df)

print(scaled\_data)

pca = PCA(0.95)

pca.fit(scaled\_data)

pca\_X = pca.transform(scaled\_data)

print(scaled\_data.shape)

print(pca\_X.shape)

y = iris.target

plt.scatter(pca\_X[:,0], pca\_X[:,1], c=y, cmap='viridis')

plt.xlabel('Principal Component 1')

plt.ylabel('Principal Component 2')

plt.title('PCA of Iris Dataset')

plt.show()

