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### **Experiment No:9**

Aim: Write a python program to evaluate a Apply PCA Algorithm on Iris Dataset

#### **Code :**

```
import numpy as np
import matplotlib.pyplot as plt
from sklearn.decomposition import PCA
from sklearn.preprocessing import StandardScaler, OneHotEncoder
from sklearn.compose import ColumnTransformer
import pandas as pd

# Load your dataset
dataset = pd.read_csv('/content/User_Data.csv')

# Separate features (X) and target variable (y) if applicable
X = dataset.iloc[:, :-1] # Assuming the last column is the target
variable
# If your dataset has a target variable, you might want to separate it
as well:
# y = dataset.iloc[:, -1].values

# Preprocessing: One-hot encode categorical variables and standardize
numerical variables
ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(),
['Gender'])], remainder='passthrough')
X_encoded = ct.fit_transform(X)

scaler = StandardScaler()
X_scaled = scaler.fit_transform(X_encoded)

# Apply PCA
pca = PCA(n_components=2)
X_pca = pca.fit_transform(X_scaled)

# Plot the results
plt.figure(figsize=(8, 6))
plt.scatter(X_pca[:, 0], X_pca[:, 1], alpha=0.8)
plt.title('PCA of Dataset')
plt.xlabel('Principal Component 1')
plt.ylabel('Principal Component 2')
plt.show()
```

OUTPUT:-

