Experiment - 6

Create a program to perform PCA

CODE :-

pca.py

```python
import numpy as np
import matplotlib.pyplot as plt
from sklearn.datasets import load_iris
from sklearn.preprocessing import StandardScaler
from sklearn.decomposition import PCA

#(Iris dataset)
data = load_iris()
X = data.data
y = data.target

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

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

print(f"Explained variance ratio: {pca.explained_variance_ratio_}")

plt.figure(figsize=(8, 6))
scatter = plt.scatter(X_pca[:, 0], X_pca[:, 1], c=y, cmap='viridis')
plt.colorbar(scatter)
plt.xlabel('Principal Component 1')
plt.ylabel('Principal Component 2')
plt.title('PCA of Iris Dataset')
plt.show()

```

OUTPUT :-

```
"/Users/kushagrasaxena/Desktop/k -means/.venv/bin/python" /Users/kushagrasaxena/Desktop/k -means/pca.py
Explained variance ratio: [0.72962445 0.22850762]
```