**EXPT NO: 6** A python program to implement face recognition

DATE: 23/10/2024 using Support Vector Machine.

## AIM:

To write a python program to implement face recognition using SVM.

## **PROCEDURE:**

Implementing face recognition using svm involves the following steps:

# **Step 1: Import Necessary Libraries**

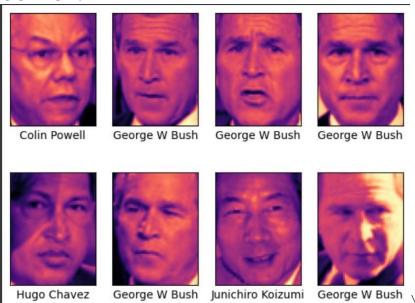
First, import the libraries that are essential for data manipulation, visualization, and model building.

```
from sklearn.datasets import fetch_lfw_people
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.svm import SVC
from sklearn.pipeline import make_pipeline
from sklearn.decomposition import PCA as RandomizedPCA
from sklearn.metrics import accuracy score
```

# **Step 2: Load the Dataset**

The dataset can be loaded and display the first few faces of the dataset.

## **OUTPUT:**



# **Step 4: Split the Data**

Split the data into training and testing sets. Fit the dataset to the model.

```
X = faces.data
y = faces.target

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.4, random state=42)
```

# **Step 5: Dimensionality Reduction**

Reduce the dimension using Principal Component Analysis (PCA) Fit the model with SVC.

```
pca = RandomizedPCA(n_components=150, whiten=True, random_state=42)
svc = SVC(kernel='rbf', class_weight='balanced')
model = make_pipeline(pca, svc)
model.fit(X_train, y_train)
```

## **Step 6: Make Predictions**

Use the model to make predictions on the test data.

```
predictions = model.predict(X test)
```

## **Step 7: Evaluate the Model**

Evaluate the model performance using metrics like Accuracy Score and confusion matrix

## **OUTPUT:**

```
predictions = model.predict(X_test)
accuracy = accuracy_score(predictions, y_test)
print(accuracy)
matrix = confusion_matrix(predictions, y_test)
print(matrix)
```

#### 0.8074074074074075

```
[[ 15
         1
            0
                         0]
   4 101
           20
                3
                   8
                      1
                         9]
   2
      0
        39
           1
               0
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      4
        5 183
              5
                   7
                      4 10]
         0 1 28
                   5
                      0 0]
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      0 0
               0 13 0
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   0
               0
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                     16
      2 1
            0
               3
                   1
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                       41]]
```

RESULT:	
This step-by-step process will help us to implement face recognition using	
SVM and analyzed their performance.	
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