

08. Write the program for Compare actual vs predicted.

PROGRAM

```
from sklearn.datasets import fetch_california_housing
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.svm import SVR
from sklearn.metrics import mean_squared_error, r2_score
import pandas as pd

data = fetch_california_housing()
X = data.data
y = data.target
feature_names = data.feature_names

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
scaler_X = StandardScaler()
scaler_y = StandardScaler()

X_train_scaled = scaler_X.fit_transform(X_train)
X_test_scaled = scaler_X.transform(X_test)
y_train_scaled = scaler_y.fit_transform(y_train.reshape(-1, 1)).ravel()

svr = SVR(kernel='rbf', C=10, gamma=0.1)
svr.fit(X_train_scaled, y_train_scaled)

y_pred_scaled = svr.predict(X_test_scaled)
y_pred = scaler_y.inverse_transform(y_pred_scaled.reshape(-1, 1)).ravel()

mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)

print("Mean Squared Error (MSE):", mse)
print("R^2 Score:", r2)

comparison = pd.DataFrame({'Actual': y_test[:10], 'Predicted': y_pred[:10]})
print("\nSample Predictions:\n", comparison)
```

OUTPUT:

Mean Squared Error (MSE): 0.32968907663332475
R^2 Score: 0.7484074955927873

Sample Predictions:

	Actual	Predicted
0	0.47700	0.496397
1	0.45800	1.458009
2	5.00001	4.205153
3	2.18600	2.428294
4	2.78000	2.740361
5	1.58700	1.649632
6	1.98200	2.566665
7	1.57500	1.678657
8	3.40000	2.313955
9	4.46600	4.679741

