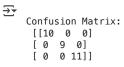
```
# KNN Classifier
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler, LabelEncoder
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix
# loading dataset directly from UCI Repository
url = "https://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data"
df = pd.read_csv(url, header=None)
# assigning column names
df.columns = ['SepalLength', 'SepalWidth', 'PetalLength', 'PetalWidth', 'Species']
# encoding categorical target variable
df['Species'] = LabelEncoder().fit_transform(df['Species'])
# splitting dataset into features (X) and target (y)
X = df.iloc[:, :-1] # features (Sepal/Petal Length/Width)
y = df.iloc[:, -1] # target (Species)
# rain-Test Split (80-20)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
# feature Scaling (Standardization)
scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)
# training KNN Classifier
k = 5 # Adjust K value as needed
knn = KNeighborsClassifier(n_neighbors=k)
knn.fit(X_train, y_train)
# Predictions
y_pred = knn.predict(X_test)
# evaluation metrics
print("\nConfusion Matrix:\n", confusion_matrix(y_test, y_pred))
print("\nClassification Report:\n", classification_report(y_test, y_pred))
print("\nAccuracy Score:", accuracy_score(y_test, y_pred))
# visualizing Decision Boundaries (Optional)
import seaborn as sns
plt.figure(figsize=(8, 6))
sns.scatterplot(x=X_test[:, 0], y=X_test[:, 1], hue=y_pred, palette='viridis', s=100, alpha=0.7)
plt.title("KNN Classification Results")
plt.xlabel("Feature 1 (Scaled)")
plt.ylabel("Feature 2 (Scaled)")
plt.show()
```



Classification Report:

| c tubbilited tibil | precision | recall | f1-score | support |
|--------------------|-----------|--------|----------|---------|
| 0 | 1.00 | 1.00 | 1.00 | 10 |
| 1 | 1.00 | 1.00 | 1.00 | 9 |
| 2 | 1.00 | 1.00 | 1.00 | 11 |
| accuracy | | | 1.00 | 30 |
| macro avg | 1.00 | 1.00 | 1.00 | 30 |
| weighted avg | 1.00 | 1.00 | 1.00 | 30 |

Accuracy Score: 1.0

