NAME : ONKAR JAMMA

ROLL NO : 21

PRACTICAL 2

```
from sklearn.datasets import load_wine
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score, classification_report,
confusion_matrix

# Load the Wine dataset
wine = load_wine()
X = wine.data
y = wine.target

# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

# Instantiate and train a classifier (e.g., K-Nearest Neighbors)
classifier = KNeighborsClassifier()
classifier.fit(X_train, y_train)

# Make predictions on the test set
y_pred = classifier.predict(X_test)

# Calculate evaluation metrics
accuracy = accuracy_score(y_test, y_pred)
conf_matrix = confusion_matrix(y_test, y_pred)
classification_rep = classification_report(y_test, y_pred)

# Display the results
print(f"Accuracy: {accuracy:.4f}")
print("\nConfusion Matrix:\n", conf_matrix)
print("\nClassification Report:\n", classification_rep)
```

```
Accuracy: 0.7222

Confusion Matrix:
 [[12  0  2]
 [ 0 11  3]
 [ 2  3  3]]
```

```
Classification Report:
              precision    recall  f1-score   support

           0       0.86      0.86      0.86        14
           1       0.79      0.79      0.79        14
           2       0.38      0.38      0.38         8

    accuracy                           0.72        36
   macro avg       0.67      0.67      0.67        36
weighted avg       0.72      0.72      0.72        36
```