# EXPERIMENT:15 Write the python program to implement Decision Tree

**PROGRAM:**

```python
from sklearn.datasets import load_iris

from sklearn.model_selection import train_test_split

from sklearn.tree import DecisionTreeClassifier, export_text


# Load dataset
iris = load_iris()
X, y = iris.data, iris.target


# Split into train & test
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)


# Create Decision Tree model
clf = DecisionTreeClassifier(criterion="entropy")  # "gini" is default
clf.fit(X_train, y_train)


# Test accuracy
print("Accuracy:", clf.score(X_test, y_test))


# Show decision rules
tree_rules = export_text(clf, feature_names=iris.feature_names)
print(tree_rules)
```

**OUTPUT:**

```
Accuracy: 1.0
|--- petal width (cm) <= 0.80
|    |--- class: 0
|--- petal width (cm) >  0.80
|    |--- petal length (cm) <= 4.75
|    |    |--- petal width (cm) <= 1.65
|    |    |    |--- class: 1
|    |    |--- petal width (cm) >  1.65
|    |    |    |--- class: 2
|    |--- petal length (cm) >  4.75
|    |    |--- petal width (cm) <= 1.75
|    |    |    |--- petal length (cm) <= 4.95
|    |    |    |    |--- class: 1
|    |    |    |--- petal length (cm) >  4.95
|    |    |    |    |--- petal width (cm) <= 1.55
|    |    |    |    |    |--- class: 2
|    |    |    |    |--- petal width (cm) >  1.55
|    |    |    |    |    |--- petal length (cm) <= 5.45
|    |    |    |    |    |    |--- class: 1
|    |    |    |    |    |--- petal length (cm) >  5.45
|    |    |    |    |    |    |--- class: 2
|    |    |--- petal width (cm) >  1.75
|    |    |    |--- petal length (cm) <= 4.85
|    |    |    |    |--- sepal width (cm) <= 3.10
|    |    |    |    |    |--- class: 2
|    |    |    |    |--- sepal width (cm) >  3.10
|    |    |    |    |    |--- class: 1
|    |    |    |--- petal length (cm) >  4.85
|    |    |    |    |--- class: 2



...Program finished with exit code 0
Press ENTER to exit console.
```