**15. Write the python program to implement Decision Tree**

**Program:**

from sklearn.datasets import load\_iris

from sklearn.tree import DecisionTreeClassifier, plot\_tree

from sklearn.model\_selection import train\_test\_split

from sklearn.metrics import accuracy\_score

import matplotlib.pyplot as plt

# Load dataset

iris = load\_iris()

X = iris.data # Features

y = iris.target # Target classes

# Split into training and test data

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.3, random\_state=42)

# Create Decision Tree classifier

clf = DecisionTreeClassifier(criterion='entropy', random\_state=0)

clf.fit(X\_train, y\_train)

# Make predictions

y\_pred = clf.predict(X\_test)

# Evaluate accuracy

accuracy = accuracy\_score(y\_test, y\_pred)

print(f"Model Accuracy: {accuracy:.2f}")

# Visualize the decision tree

plt.figure(figsize=(10, 6))

plot\_tree(clf, filled=True, feature\_names=iris.feature\_names, class\_names=iris.target\_names)

plt.title("Decision Tree for Iris Dataset")

plt.show()

**output:**

