Assignment No.6

import pandas as pd

from sklearn.datasets import load\_iris

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

from sklearn.tree import DecisionTreeClassifier

from sklearn import metrics

# Load dataset

iris = load\_iris()

X = iris.data

y = iris.target

# Split the dataset into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.4, random\_state=42)

# Create and train the Decision Tree Classifier

clf = DecisionTreeClassifier(max\_depth=3, random\_state=42)

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

# Make predictions on the test set

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

# Evaluate model performance

print("Accuracy:", metrics.accuracy\_score(y\_test, y\_pred))

# Parameter tuning example

clf\_tuned = DecisionTreeClassifier(criterion="entropy", max\_depth=3, min\_samples\_split=4)

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

# Predict the response for test dataset with tuned parameters

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

# Model Accuracy after tuning

print("\nTuned Accuracy:", metrics.accuracy\_score(y\_test, y\_pred\_tuned))

#OUTPUT

Accuracy: 0.9833333333333333

Tuned Accuracy: 0.9833333333333333