**DECISION TREE (ID3):**

**CODE:**

#Import Libraries

import matplotlib.pyplot as plt

from sklearn.datasets import load\_iris

#from sklearn.datasets import load\_breast\_cancer

from sklearn.tree import DecisionTreeClassifier

#from sklearn.ensemble import RandomForestClassifier

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

import pandas as pd

import numpy as np

from sklearn import tree

#Load the Dataset

import pandas as pd

from sklearn.datasets import load\_iris

data = load\_iris()

#data= pd.read\_csv("D:/GEO/BE COURSES/LAB/DATASET/pima-indians-diabetes.csv")

df = pd.DataFrame(data.data, columns=data.feature\_names)

df['target'] = data.target

#Splitting Data into Training and Test Sets

X\_train, X\_test, Y\_train, Y\_test = train\_test\_split(df[data.feature\_names], df['target'], random\_state=0)

#Scikit-learn 4-Step Modeling Pattern

# Step 1: Import the model you want to use

# This was already imported earlier in the notebook so commenting out

#from sklearn.tree import DecisionTreeClassifier

# Step 2: Make an instance of the Model

clf = DecisionTreeClassifier(max\_depth = 2,random\_state = 0)

# Step 3: Train the model on the data

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

# Step 4: Predict labels of unseen (test) data

# Not doing this step in the tutorial

# clf.predict(X\_test)

#How to Visualize Decision Trees using Matplotlib

tree.plot\_tree(clf);

fn=['sepal length (cm)','sepal width (cm)','petal length (cm)','petal width (cm)']

cn=['setosa', 'versicolor', 'virginica']

fig, axes = plt.subplots(nrows = 1,ncols = 1,figsize = (4,4), dpi=300)

tree.plot\_tree(clf,

feature\_names = fn,

class\_names=cn,

filled = True);

fig.savefig('imagename.png')

**OUTPUT:**

