Date:22-12-2021

**Program - 8**

**Aim:**

Program to implement decision trees using any standard dataset available in the public domain and find the accuracy of the algorithm

**Program:**

import pandas as pd

import numpy as np

import seaborn as sns

import matplotlib.pyplot as plt

from sklearn.preprocessing import LabelEncoder

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

from sklearn.tree import DecisionTreeClassifier

from sklearn.metrics import classification\_report,confusion\_matrix

from sklearn.tree import plot\_tree

df=sns.load\_dataset('iris')

print(df.head())

print(df.info())

df.isnull().any()

print(df.shape)

sns.pairplot(data=df,hue='species')

plt.savefig("pne.png")

sns.heatmap(df.corr())

plt.savefig("one.png")

target=df['species']

df1=df.copy()

df1=df1.drop('species',axis=1)

print(df1.shape)

print(df1.head())

x=df1

print(target)

le=LabelEncoder()

target=le.fit\_transform(target)

print(target)

y=target

x\_train,x\_test,y\_train,y\_test=train\_test\_split(x,y,test\_size=0.2,random\_state=42)

print("Training split input",x\_train.shape)

print("Testing split input",x\_test.shape)

dtree=DecisionTreeClassifier()

dtree.fit(x\_train,y\_train)

print("Decision tree classifier created")

y\_pred=dtree.predict(x\_test)

print("classsification report \n",classification\_report(y\_test,y\_pred))

cm=confusion\_matrix(y\_test,y\_pred)

plt.figure(figsize=(5,5))

sns.heatmap(data=cm,linewidth=5,annot=True,square=True,cmap='Blues')

plt.ylabel('Actual label')

plt.xlabel('Predictd label')

all\_sample\_title='Accuracy Score:{0}'.format(dtree.score(x\_test,y\_test))

plt.savefig("two.png")

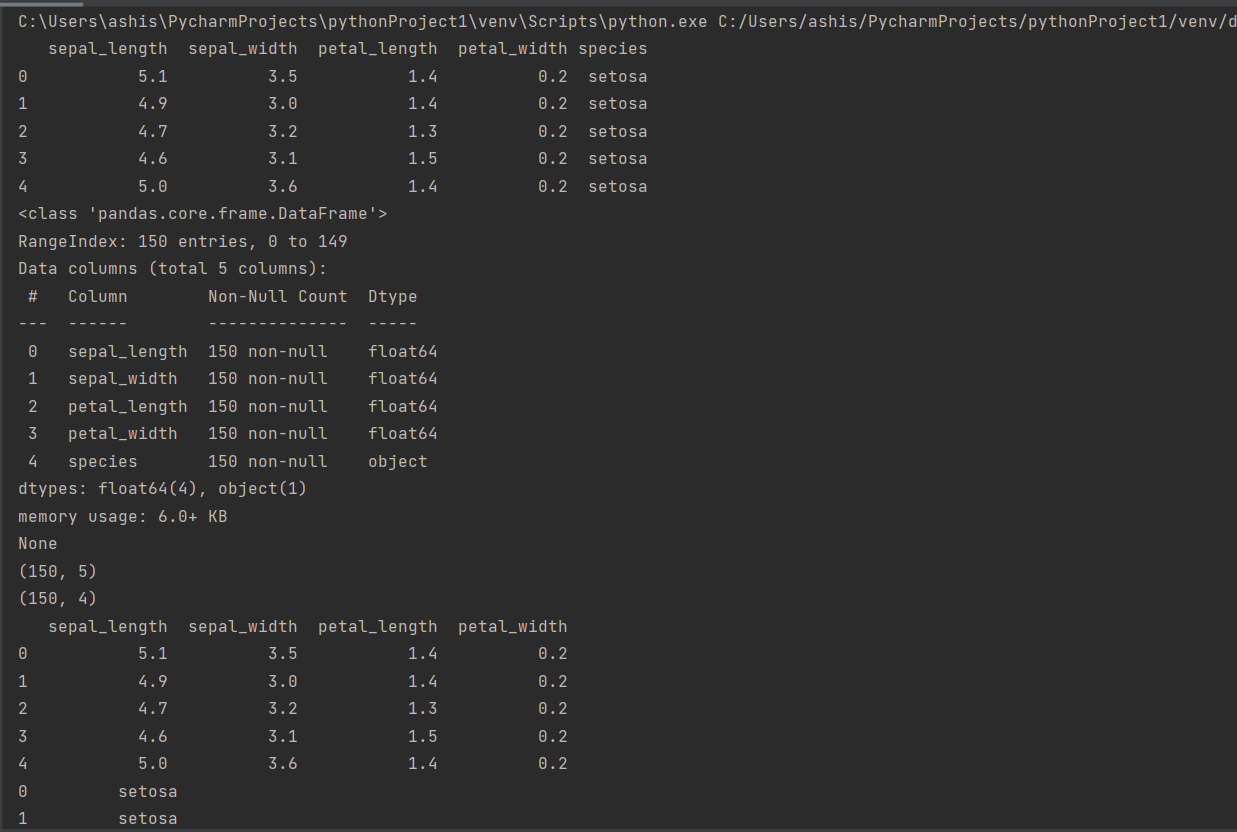
plt.figure(figsize=(20,20))

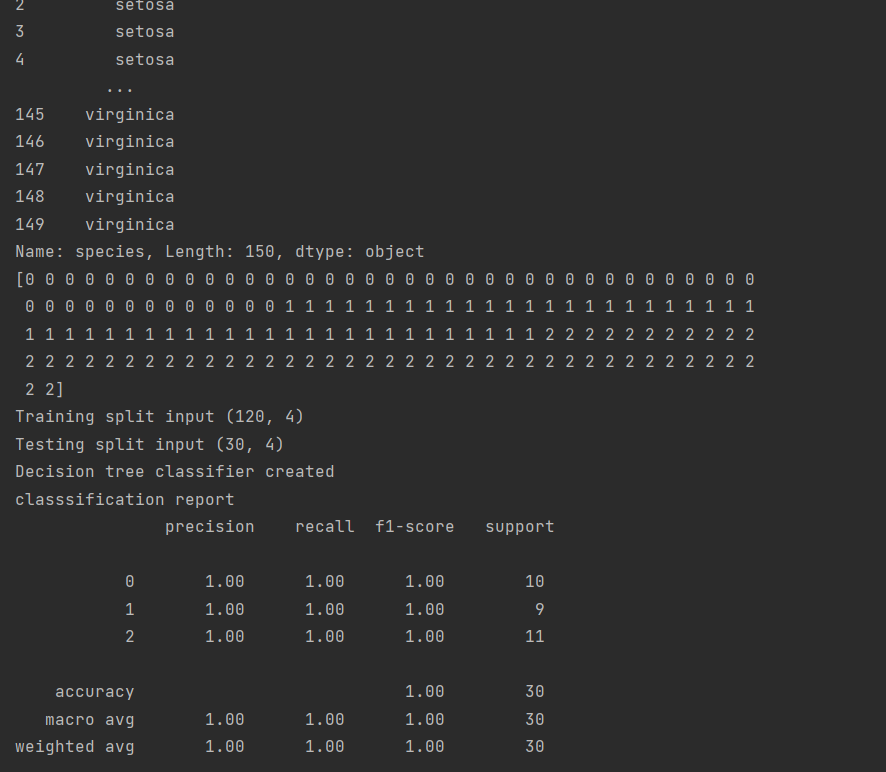
dec\_tree=plot\_tree(decision\_tree=dtree,feature\_names=df1.columns,

class\_names=["setosa","vercicikor","verginica"],filled=True,precision=4,rounded=True)

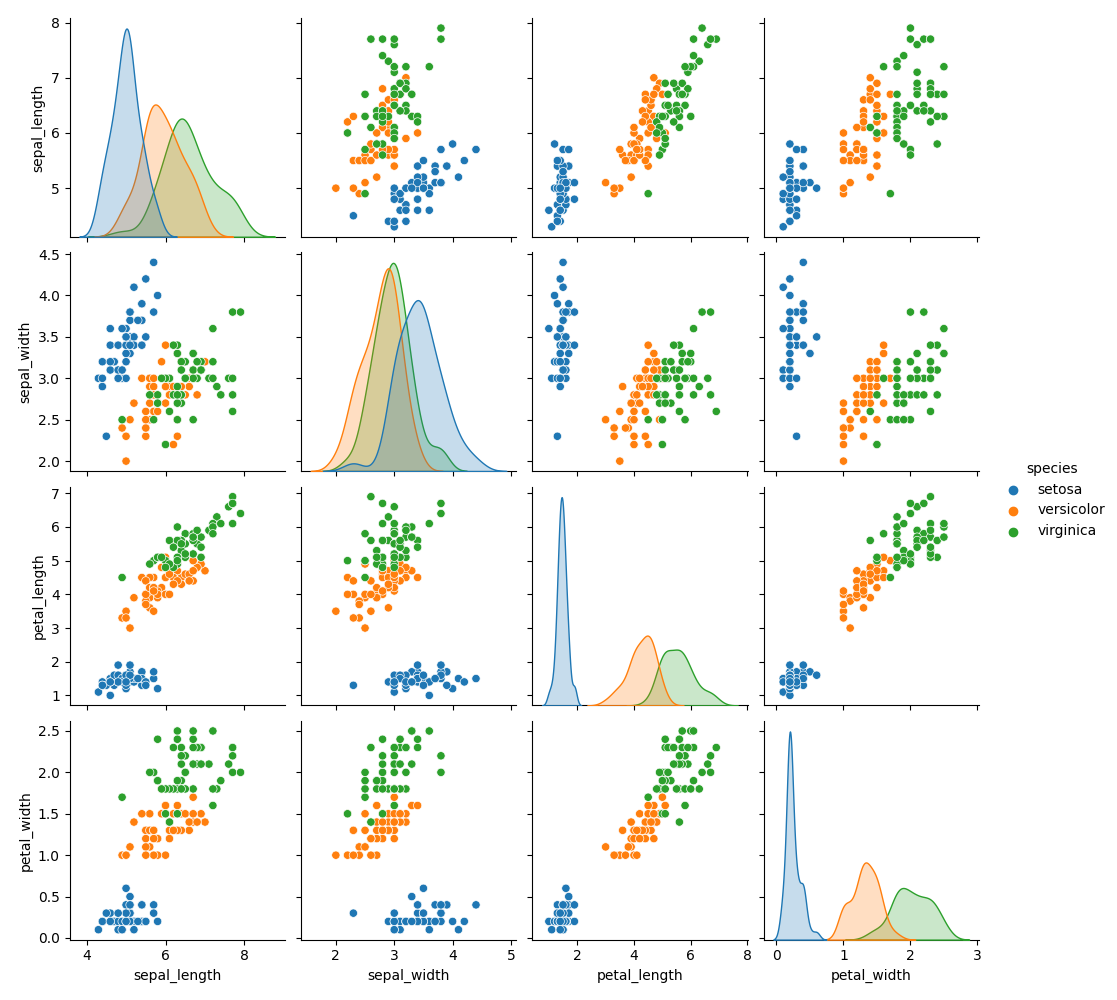
plt.savefig("three.png")

**OUTPUT**

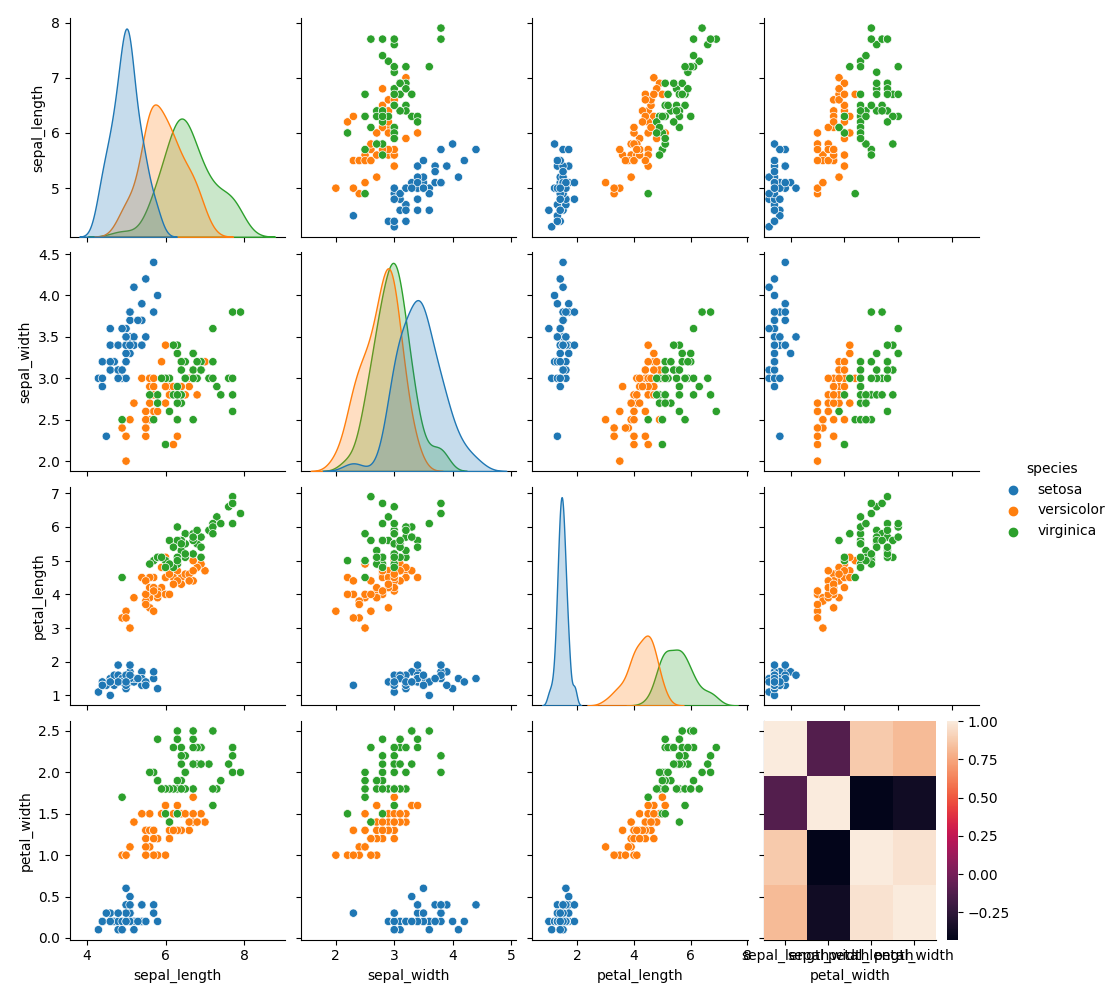
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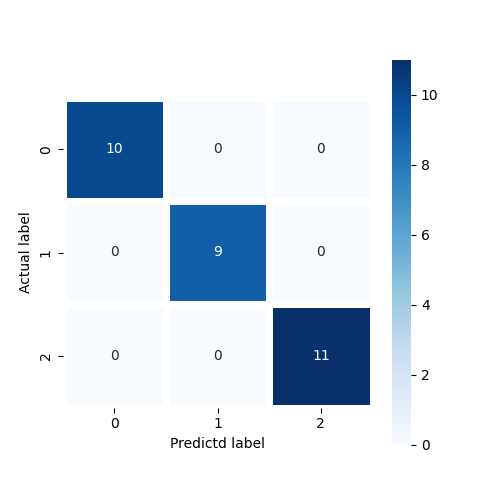
**Pne.png**

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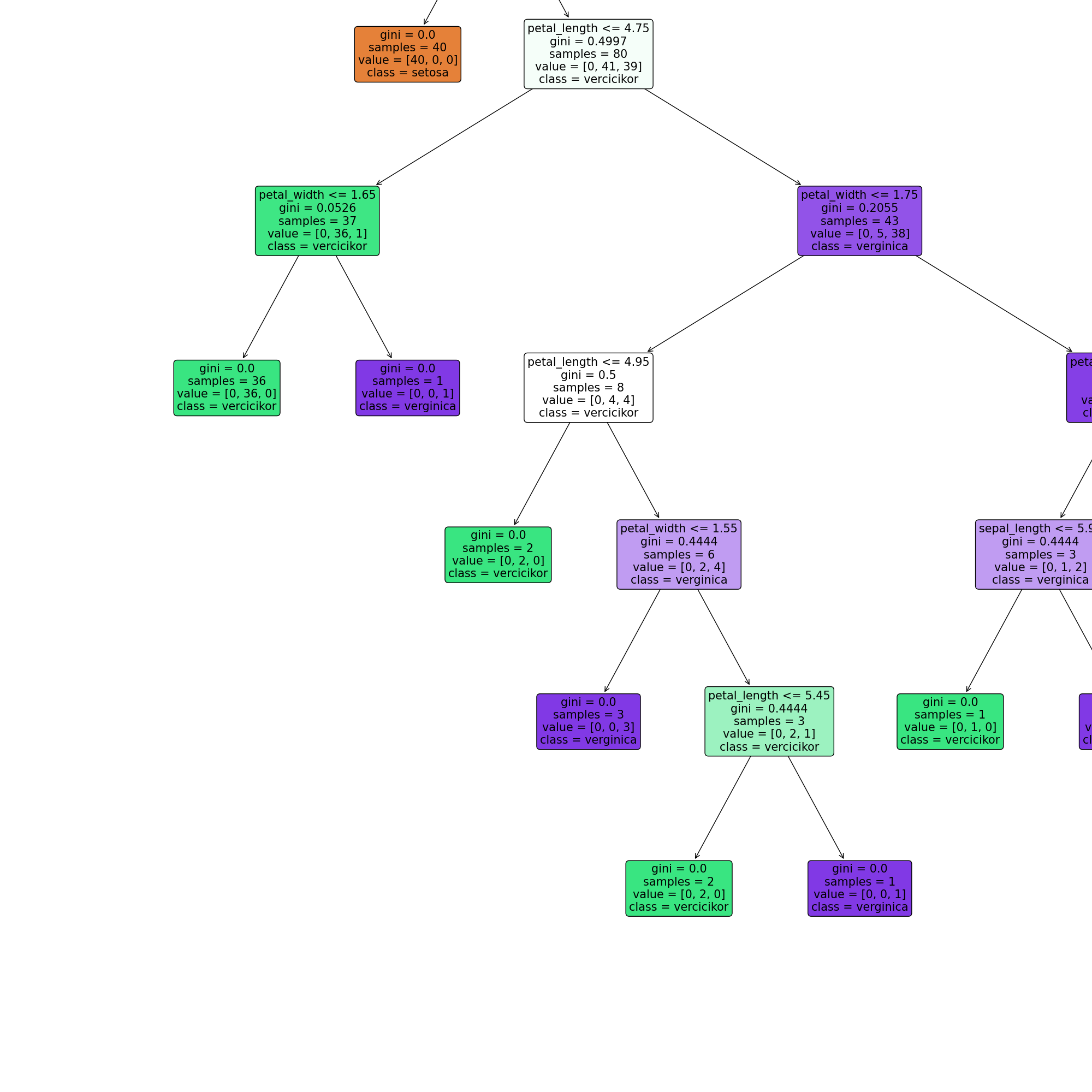
**One.png**

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**Two.png**

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**Three.png**

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