Name : Niket Ralebhat

Section : 2

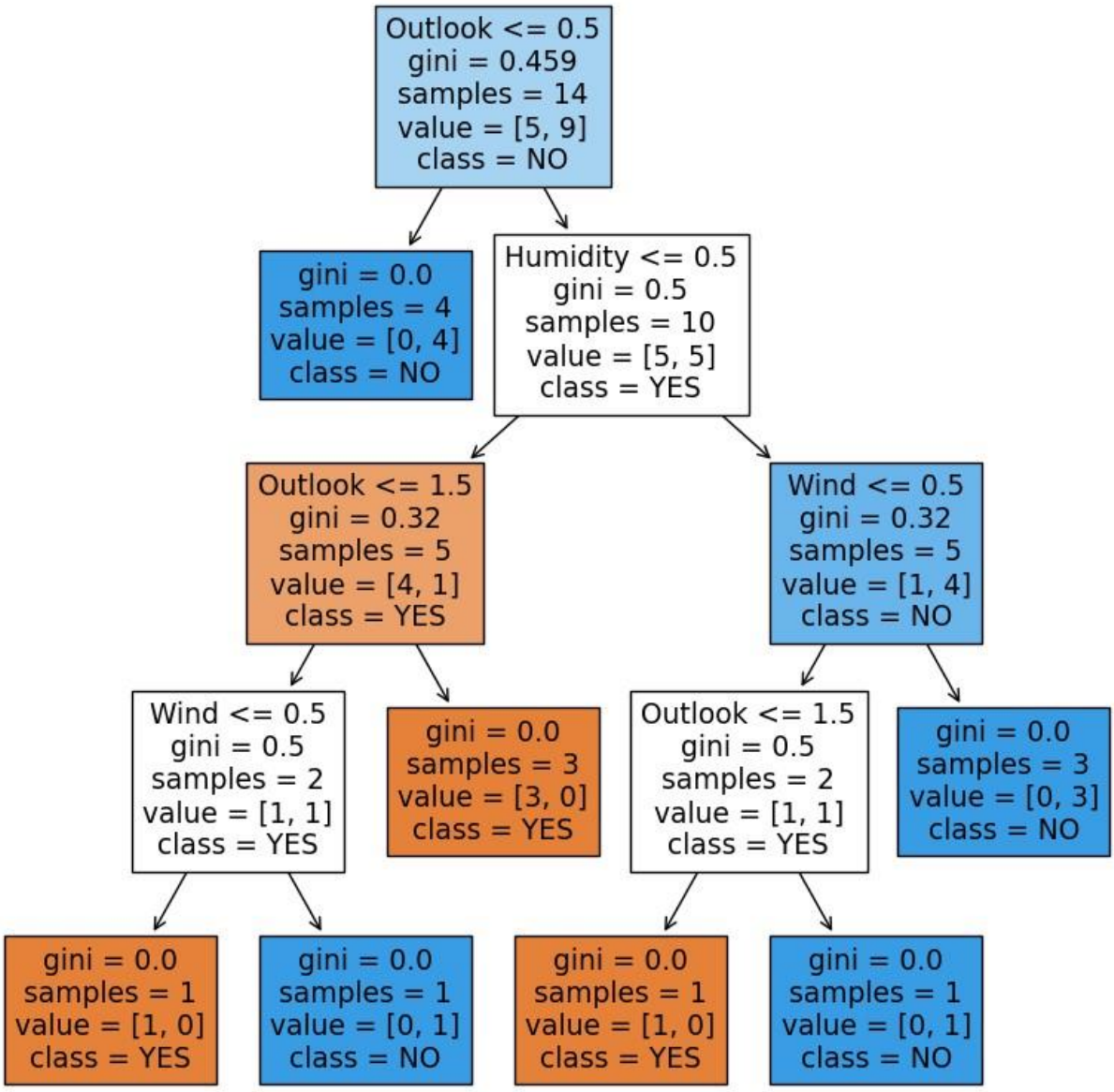
Scholar Number : 211112268

In [ ]:
```
import pandas as pd
from sklearn import preprocessing
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix from
sklearn.tree import DecisionTreeClassifier from
sklearn import tree
from matplotlib import pyplot as plt

data=pd.read_csv('PlayTennis.csv')
le = preprocessing.LabelEncoder()
data_train_df = pd.DataFrame(data)
data_train_df_encoded = data_train_df.apply(le.fit_transform)
x=data_train_df_encoded[["Outlook","Temperature","Humidity","Wind"]]
y=data_train_df_encoded["Play Tennis"]


#x.train,x.test,y.train,y.test=train_test_split(x,y,test_size=0.3,random_
DTmodel=DecisionTreeClassifier()
DTmodel.fit(x,y)

#print(confusion_matrix(y.test,y_pred))
text_representation = tree.export_text(DTmodel)
print(text_representation) fig =
plt.figure(figsize=(10,10))
tree.plot_tree(DTmodel, feature_names=["Outlook","Temperature","Humidity"
```

```
|--- feature_0 <= 0.50
|   |--- class: 1
|--- feature_0 >  0.50
|   |--- feature_2 <= 0.50
|   |   |--- feature_0 <= 1.50
|   |   |   |--- feature_3 <= 0.50
|   |   |   |   |--- class: 0
|   |   |   |--- feature_3 >  0.50
|   |   |   |   |--- class: 1
|   |   |--- feature_0 >  1.50
|   |   |   |--- class: 0
|   |--- feature_2 >  0.50
|   |   |--- feature_3 <= 0.50
|   |   |   |--- feature_0 <= 1.50
|   |   |   |   |--- class: 0
|   |   |   |--- feature_0 >  1.50
|   |   |   |   |--- class: 1
|   |   |--- feature_3 >  0.50
|   |   |   |--- class: 1
```

Out[ ]: [Text(0.4444444444444444, 0.9, 'Outlook <= 0.5\ngini = 0.459\nsamples =

```
14\nvalue = [5, 9]\nclass = NO'),
 Text(0.3333333333333333, 0.7, 'gini = 0.0\nsamples = 4\nvalue = [0,
4]\
nclass = NO'),
 Text(0.5555555555555556, 0.7, 'Humidity <= 0.5\ngini = 0.5\nsamples =
1
0\nvalue = [5, 5]\nclass = YES'),  Text(0.3333333333333333, 0.5,
'Outlook <= 1.5\ngini = 0.32\nsamples = 5
\nvalue = [4, 1]\nclass = YES'),
 Text(0.2222222222222222, 0.3, 'Wind <= 0.5\ngini = 0.5\nsamples =
2\nva
lue = [1, 1]\nclass = YES'),
 Text(0.1111111111111111, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [1,
0]\
nclass = YES'),
 Text(0.3333333333333333, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [0,
1]\
nclass = NO'),
 Text(0.4444444444444444, 0.3, 'gini = 0.0\nsamples = 3\nvalue = [3,
0]\
nclass = YES'),
 Text(0.7777777777777778, 0.5, 'Wind <= 0.5\ngini = 0.32\nsamples =
5\nv
alue = [1, 4]\nclass = NO'),
 Text(0.6666666666666666, 0.3, 'Outlook <= 1.5\ngini = 0.5\nsamples =
2\
nvalue = [1, 1]\nclass = YES'),
 Text(0.5555555555555556, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [1,
0]\
nclass = YES'),
 Text(0.7777777777777778, 0.1, 'gini = 0.0\nsamples = 1\nvalue = [0,
1]\
nclass = NO'),
 Text(0.8888888888888888, 0.3, 'gini = 0.0\nsamples = 3\nvalue = [0,
3]\
nclass = NO')]
```


Outlook <= 0.5
gini = 0.459
samples = 14
value = [5, 9]
class = NO
gini = 0.0
samples = 4
value = [0, 4]
class = NO
Humidity <= 0.5
gini = 0.5
samples = 10
value = [5, 5]
class = YES
Outlook <= 1.5
gini = 0.32
samples = 5
value = [4, 1]
class = YES
Wind <= 0.5
gini = 0.32
samples = 5
value = [1, 4]
class = NO
Wind <= 0.5
gini = 0.5
samples = 2
value = [1, 1]
class = YES
gini = 0.0
samples = 3
value = [3, 0]
class = YES
Outlook <= 1.5
gini = 0.5
samples = 2
value = [1, 1]
class = YES
gini = 0.0
samples = 3
value = [0, 3]
class = NO
gini = 0.0
samples = 1
value = [1, 0]
class = YES
gini = 0.0
samples = 1
value = [0, 1]
class = NO
gini = 0.0
samples = 1
value = [1, 0]
class = YES
gini = 0.0
samples = 1
value = [0, 1]
class = NO