Name : Prem Vinod Bansod
Roll no : 41310
Assignment No : 02 (ML)

Code:

```python
#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Thu Feb 11 14:22:28 2021

@author: prem
"""

import pandas as pd
import matplotlib.pyplot as plt

#reading Dataset
dataset=pd.read_csv("data.csv")
x=dataset.iloc[:,1:5]
y = dataset.iloc[:,5]

from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
x = x.apply(le.fit_transform)

from sklearn.tree import DecisionTreeClassifier
dt = DecisionTreeClassifier()
dt.fit(x,y)

y_pred=dt.predict([[2,1,0,0]])
print("Prediction:", y_pred[0])

from sklearn import tree
fig = plt.figure(figsize=(25,20))
tree.plot_tree(dt)
```

Output:

IPython console

Console 1/A

```
Python 3.8.5 (default, Jan 27 2021, 15:41:15)
Type "copyright", "credits" or "license" for more information.

IPython 7.13.0 -- An enhanced Interactive Python.

In [1]: runfile('/home/prem/41310_LP3/Machine Learning/Assignment 2/Assignment2.py', wdir='/home/prem/41310_LP3/Machine Learning/Assignment 2')
Prediction: No
```

```
X[0] <= 0.5
gini = 0.459
samples = 14
value = [5, 9]
```

```
gini = 0.0
samples = 4
value = [0, 4]
```

```
X[2] <= 0.5
gini = 0.5
samples = 10
value = [5, 5]
```

```
X[1] <= 1.5
gini = 0.32
samples = 5
value = [1, 4]
```

```
X[0] <= 1.5
gini = 0.32
samples = 5
value = [4, 1]
```

IPython console

Console 1/A

```
X[1] <= 1.5
gini = 0.32
samples = 5
value = [1, 4]
```

```
X[0] <= 1.5
gini = 0.32
samples = 5
value = [4, 1]
```

```
X[3] <= 0.5
gini = 0.444
samples = 3
value = [1, 2]
```

```
gini = 0.0
samples = 2
value = [0, 2]
```

```
gini = 0.0
samples = 3
value = [3, 0]
```

```
X[3] <= 0.5
gini = 0.5
samples = 2
value = [1, 1]
```

```
X[0] <= 1.5
gini = 0.5
samples = 2
value = [1, 1]
```

```
gini = 0.0
samples = 1
value = [0, 1]
```

```
gini = 0.0
samples = 1
value = [1, 0]
```

```
gini =
sampl
value =
```

```
gini = 0.0
samples = 1
```

```
gini = 0.0
samples = 1
```

IPython console

Console 1/A ❌

```
X[3] <= 0.5
gini = 0.444
samples = 3
value = [1, 2]
```

```
gini = 0.0
samples = 2
value = [0, 2]
```

```
gini = 0.0
samples = 3
value = [3, 0]
```

```
X[3] <= 0.5
gini = 0.5
samples = 2
value = [1, 1]
```

```
X[0] <= 1.5
gini = 0.5
samples = 2
value = [1, 1]
```

```
gini = 0.0
samples = 1
value = [0, 1]
```

```
gini = 0.0
samples = 1
value = [1, 0]
```

```
gini =
sampl
value =
```

```
gini = 0.0
samples = 1
value = [0, 1]
```

```
gini = 0.0
samples = 1
value = [1, 0]
```

In [2]: