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from sklearn.preprocessing import LabelEncoder
from sklearn.tree import DecisionTreeClassifier
from sklearn.tree import export_graphviz
import pandas as pd
import numpy as np

dataset=pd.read_csv("assign2DataAll.csv")
x=dataset.iloc[0:15,:-1]      #Reading all rows
y=dataset.iloc[:14,5]        #Reading first 14 rows only 5th coloumn (from 0)

print("\nAll Data\n\n",x)

le=LabelEncoder()
lx=x.apply(le.fit_transform)

regressor=DecisionTreeClassifier()
regressor.fit(lx.iloc[:14,1:5],y)    #Fitting only first 14 rows with label

x_test = lx[14:]                #14 above till last for test (not 14)

print("\nTest Data\n\n",x_test)
x_test=sum(x_test.values.tolist(),[]) #for conversion of df to list

x_test =x_test[1:]
y_pred=regressor.predict([x_test])
print("\nFor test data:\n",x[14:])
print("Output: Prediction is ",y_pred)
export_graphviz(regressor, out_file ='tree.dot')    #text graph

#sudo apt install graphviz
#dot -Tpng tree.dot -o tree.png

```

OUTPUT:

(base) ubuntu@OS-lab:~/Aaditya\$ python3 Decision_Tree.py

All Data

	id	age	income	gender	marital status
0	1	<21	high	male	single
1	2	<21	high	male	married
2	3	21-35	high	male	single
3	4	>35	medium	male	single
4	5	>35	low	female	single
5	6	>35	low	female	married
6	7	21-35	low	female	married
7	8	<21	medium	male	single
8	9	<21	low	female	married
9	10	>35	medium	female	single
10	11	<21	medium	female	married
11	12	21-35	medium	male	married
12	13	21-35	high	female	single
13	14	>35	medium	male	married
14	15	<21	low	female	married

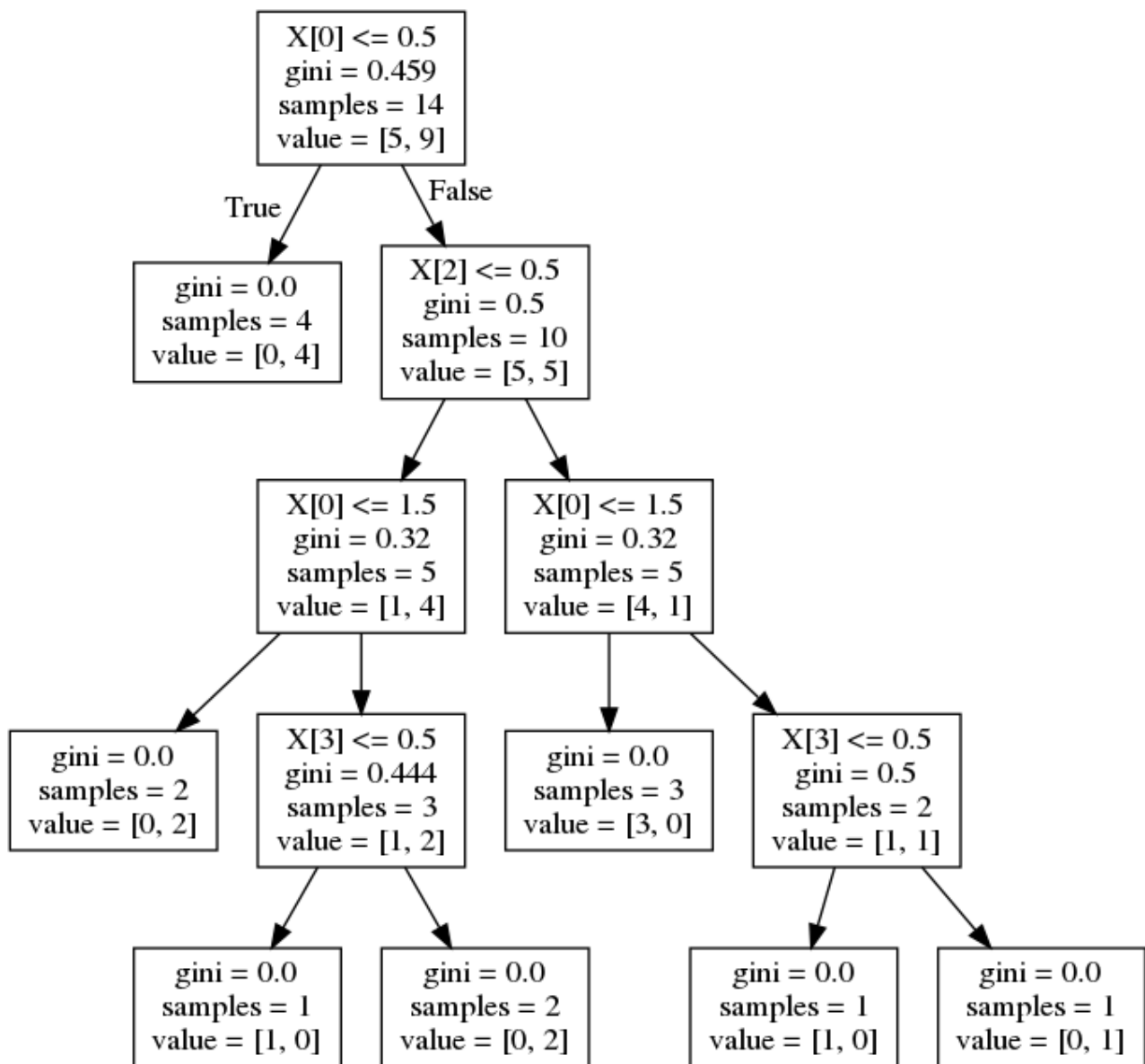
Test Data

	id	age	income	gender	marital status
14	14	1	1	0	0

For test data:

	id	age	income	gender	marital status
14	15	<21	low	female	married

Output: Prediction is ['yes']



Final Decision Tree