DECISION Tree Classification

Aim

To implement a decision tree classification technique for gender classification using Python

Code

```
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score, classification_report

import pandas as pd

data = {
    'Height': [5.5, 5.9, 5.0, 6.2, 6.5],
    'weight': [65, 72, 50, 50, 80, 62, 58, 48],
    'shoesize': [9, 11, 10, 6, 8],
    'Gender': ['Male', 'Male', 'female', 'female']
}

df = pd.DataFrame(data)
df['Gender'] = df['Gender'].map({'Male': 1, 'female': 0})

X = df[['Height', 'weight', 'shoeSize']]
y = df['Gender']

X_train, X_test, y_train, y_test = train_test_split(X, y,
                    test_size = 0.2, random_state = 0)
```

```
clf = DecisionTreeclassifical(criteria = 'gini', max depth = 3,
random State = 42)

clf fit (X_train, y_train)

X_pred = clf. predict (x_test)

accuracy = accuracy Score(y_test, y_pred)

print ("accuracy * 100.2f $ %.'
Print ( classification_report (y_test, y_Pred))


from sklearn.tree import plot_tree
import matplotlib.pyplot as plt

plt. figure (figsize = (12,8))
plt_tree (clf, feature_name = [Height, Wierght],
class_names["Female", "male"], filled = True)
plt. Show()
```
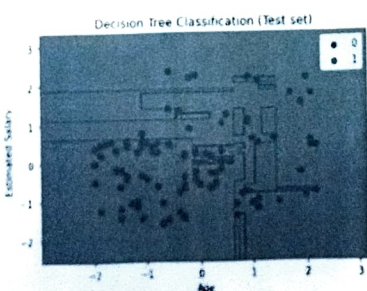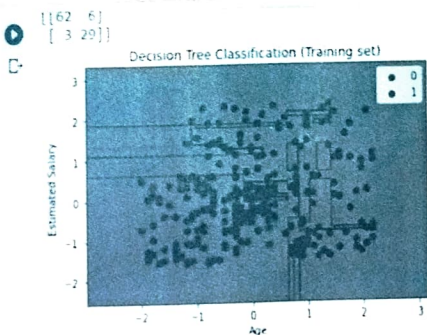
output


```
[[62  6]
 [ 3 29]]
```
Decision Tree Classification (Training set)

Decision Tree Classification (Test set)

Result:

Thus the output verified successfully and the output is generated in Decision tree based using python