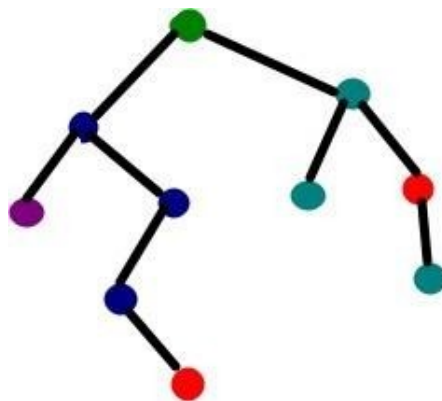


**EX.NO:7**  
**Reg.no:220701013**

**DATE:25/9/2024**

## **IMPLEMENTATION OF DECISION TREE CLASSIFICATION TECHNIQUES**

Decision Tree is one of the most powerful and popular algorithms. Decision-tree algorithm falls under the category of supervised learning algorithms. It works for both continuous as well as categorical output variables.



### **AIM:**

To implement a decision tree classification technique for gender classification using python.

### **EXPLANATION:**

- Import tree from sklearn.
- Call the function DecisionTreeClassifier() from tree
- Assign values for X and Y.
- Call the function predict for Predicting on the basis of given randomvalues for each given feature.
- Display the output.

## CODE:

```
import pandas as pd
from sklearn.tree import DecisionTreeClassifier

data = {
    'Height': [152, 155, 172, 185, 167, 180, 157, 180, 164, 177],
    'Weight': [45, 57, 72, 85, 68, 78, 22, 90, 66, 88],
    'Gender': ['Female', 'Female', 'Male', 'Male', 'Female', 'Male', 'Female', 'Male', 'Female', 'Male']
}

df = pd.DataFrame(data)
X = df[['Height', 'Weight']]
Y = df['Gender']

classifier = DecisionTreeClassifier()
classifier.fit(X, Y)

height = float(input("Enter height (in cm) for prediction: "))
weight = float(input("Enter weight (in kg) for prediction: "))
random_values = pd.DataFrame([[height, weight]], columns=['Height', 'Weight'])
predicted_gender = classifier.predict(random_values)

print(f"Predicted gender for height {height} cm and weight {weight} kg: {predicted_gender[0]}")
```

## OUTPUT:

The screenshot shows a Jupyter Notebook interface with a file named '22071013.ipynb'. The notebook contains a classification report and a prediction prompt. The classification report shows perfect performance (1.00 accuracy, precision, recall, and f1-score) for both classes (0 and 1). The prediction prompt asks for height and weight, and predicts 'Male' based on the input values (Height: 170, Weight: 65). A warning message is also visible at the bottom of the notebook output.

22071013.ipynb ☆

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Accuracy: 1.00  
Classification Report:

	precision	recall	f1-score	support
0	1.00	1.00	1.00	1
1	1.00	1.00	1.00	1
accuracy			1.00	2
macro avg	1.00	1.00	1.00	2
weighted avg	1.00	1.00	1.00	2

Provide the following details to predict gender:  
Height (in cm): 170  
Weight (in kg): 65  
Shoe Size: 10  
Predicted Gender: Male  
/usr/local/lib/python3.10/dist-packages/sklearn/base.py:493: UserWarning: X does not have valid feature names, but DecisionTreeClassifier.fit requires one.  
warnings.warn()

**RESULT:**

Thus, the decision tree classification has been implemented successfully.