

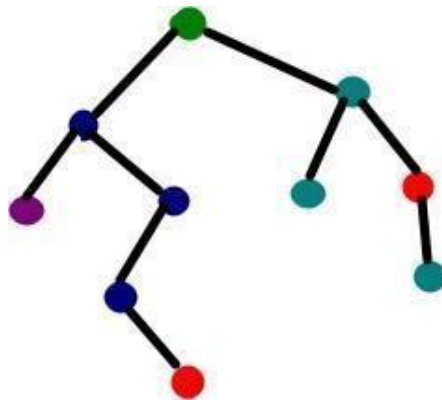
EX.NO:7

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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 random values 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']
}

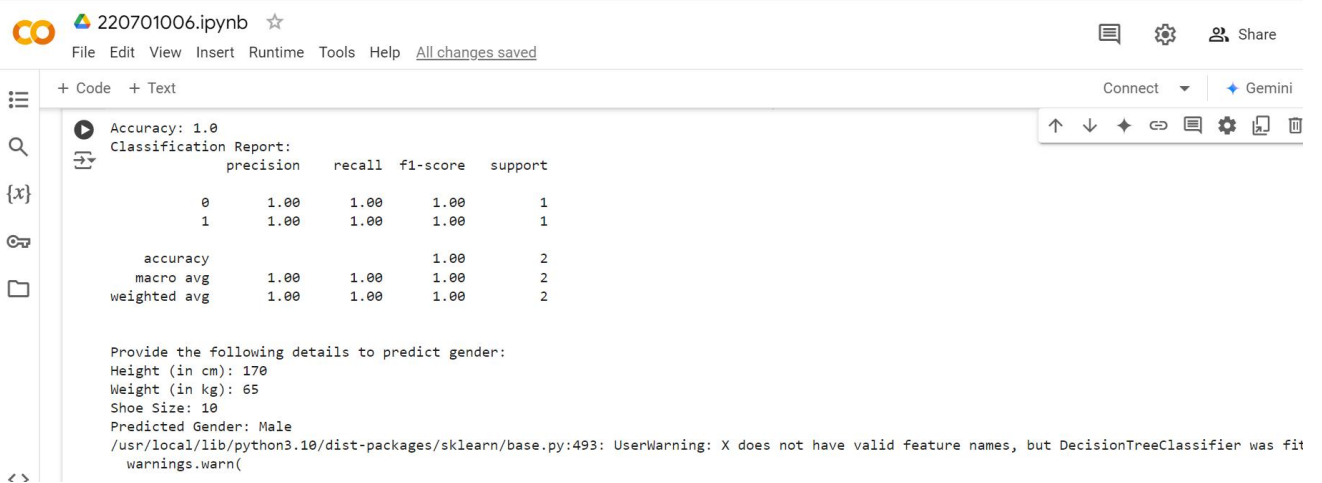
df = pd.DataFrame(data)
X = df[['Height', 'Weight']]
Y = df['Gender']

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 "220701006.ipynb". The notebook contains a classification report and a prediction result. The classification report shows perfect performance (1.00 accuracy, precision, recall, and f1-score) for both classes (0 and 1). The prediction result shows a predicted gender of "Male" for a height of 170 cm and weight of 65 kg. A warning message is displayed at the bottom: "UserWarning: X does not have valid feature names, but DecisionTreeClassifier was fit".

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 was fit
warnings.warn(

RESULT:

Thus, the decision tree classification has been implemented successfully.