EXPERIMENT- 15

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

# Dataset inside code
data = {
    'outlook': ['Sunny','Sunny','Overcast','Rain','Rain','Rain','Overcast',
                'Sunny','Sunny','Rain','Sunny','Overcast','Overcast','Rain'],
    'temp': ['Hot','Hot','Hot','Mild','Cool','Cool','Cool',
             'Mild','Cool','Mild','Mild','Mild','Hot','Mild'],
    'humidity': ['High','High','High','High','Normal','Normal','Normal',
                 'High','Normal','Normal','Normal','High','Normal','High'],
    'wind': ['Weak','Strong','Weak','Weak','Weak','Strong','Strong',
             'Weak','Weak','Weak','Strong','Strong','Weak','Strong'],
    'play': ['No','No','Yes','Yes','Yes','No','Yes',
             'No','Yes','Yes','Yes','Yes','Yes','No']
}

df = pd.DataFrame(data)
print("Dataset:")
print(df)

# Label Encoding
le_dict = {}
for column in df.columns:
    le = LabelEncoder()
    df[column] = le.fit_transform(df[column])
    le_dict[column] = le

X = df.drop('play', axis=1)
y = df['play']

model = DecisionTreeClassifier(criterion="entropy")
model.fit(X, y)

sample = {
    'outlook': le_dict['outlook'].transform(['Sunny'])[0],
    'temp': le_dict['temp'].transform(['Mild'])[0],
    'humidity': le_dict['humidity'].transform(['High'])[0],
    'wind': le_dict['wind'].transform(['Weak'])[0]
}

sample_df = pd.DataFrame([sample])
prediction = model.predict(sample_df)[0]

print("\nPrediction (0 = No, 1 = Yes):", prediction)
```

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```
print("\nPrediction (0 = No, 1 = Yes):", prediction)
```

```
Dataset:
     outlook  temp humidity    wind play
0      Sunny   Hot     High    Weak   No
1      Sunny   Hot     High  Strong   No
2   Overcast   Hot     High    Weak  Yes
3       Rain  Mild     High    Weak  Yes
4       Rain  Cool   Normal    Weak  Yes
5       Rain  Cool   Normal  Strong   No
6   Overcast  Cool   Normal  Strong  Yes
7      Sunny  Mild     High    Weak   No
8      Sunny  Cool   Normal    Weak  Yes
9       Rain  Mild   Normal    Weak  Yes
10     Sunny  Mild   Normal  Strong  Yes
11  Overcast  Mild     High  Strong  Yes
12  Overcast   Hot   Normal    Weak  Yes
13      Rain  Mild     High  Strong   No

Prediction (0 = No, 1 = Yes): 0
```