

6. Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.

```
# import necessary libraries
import pandas as pd
from sklearn import tree
from sklearn.preprocessing import LabelEncoder
from sklearn.naive_bayes import GaussianNB

# load data from CSV
data = pd.read_csv('tennisdata.csv')
print("The first 5 values of data is :\n",data.head())

# obtain Train data and Train output
X = data.iloc[:, :-1]
print("\nThe First 5 values of train data is\n",X.head())

y = data.iloc[:, -1]
print("\nThe first 5 values of Train output is\n",y.head())

# Convert then in numbers
le_outlook = LabelEncoder()
X.Outlook = le_outlook.fit_transform(X.Outlook)

le_Temperature = LabelEncoder()
X.Temperature = le_Temperature.fit_transform(X.Temperature)

le_Humidity = LabelEncoder()
X.Humidity = le_Humidity.fit_transform(X.Humidity)

le_Windy = LabelEncoder()
X.Windy = le_Windy.fit_transform(X.Windy)

print("\nNow the Train data is :\n",X.head())

le_PlayTennis = LabelEncoder()
y = le_PlayTennis.fit_transform(y)
print("\nNow the Train output is\n",y)

from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X,y, test_size=0.20)

classifier = GaussianNB()
classifier.fit(X_train,y_train)

from sklearn.metrics import accuracy_score
print("Accuracy is:",accuracy_score(classifier.predict(X_test),y_test))
```

OUTPUT

THe first 5 values of data is :

	Outlook	Temperature	Humidity	Windy	PlayTennis
0	Sunny	Hot	High	False	No
1	Sunny	Hot	High	True	No
2	Overcast	Hot	High	False	Yes
3	Rainy	Mild	High	False	Yes
4	Rainy	Cool	Normal	False	Yes

The First 5 values of train data is

	Outlook	Temperature	Humidity	Windy
0	Sunny	Hot	High	False
1	Sunny	Hot	High	True
2	Overcast	Hot	High	False
3	Rainy	Mild	High	False
4	Rainy	Cool	Normal	False

The first 5 values of Train output is

- 0 No
- 1 No
- 2 Yes
- 3 Yes
- 4 Yes

Name: PlayTennis, dtype: object

Now the Train data is :

	Outlook	Temperature	Humidity	Windy
0	2	1	0	0
1	2	1	0	1
2	0	1	0	0
3	1	2	0	0
4	1	0	1	0

Now the Train output is

[0 0 1 1 1 0 1 0 1 1 1 1 1 0]

Accuracy is: 0.3333333333333333