Ex. No.3	**NAIVE BAYES MODEL**
Date:	

Aim:

    To write a python program to implement Naïve Bayes model.

Algorithm:

Step 1. Load the libraries: import the required libraries such as pandas, numpy, and sklearn.

Step 2. Load the data into a pandas dataframe.

Step 3. Clean and preprocess the data as necessary. For example, you can handle missing values, convert categorical variables into numerical variables, and normalize the data.

Step 4. Split the data into training and test sets using the **train_test_split** function from scikit-learn.

Step 5. Train the Gaussian Naive Bayes model using the training data.

Step 6. Evaluate the performance of the model using the test data and the **accuracy_score** function from scikit-learn.

Step 7. Finally, you can use the trained model to make predictions on new data.

Program:

```python
import pandas as pd
import numpy as np
from sklearn.naive_bayes import GaussianNB
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score

# Load the data
df = pd.read_csv('data.csv')

# Split the data into training and test sets
X = df.drop('buy_computer', axis=1)
y = df['buy_computer']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=0)

# Train the model
model = GaussianNB()
model.fit(X_train.values, y_train.values)

# Test the model
y_pred = model.predict(X_test.values)
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:", accuracy)
```

```
# Make a prediction on new data
new_data = np.array([[35, 60000, 1, 100]])
prediction = model.predict(new_data)
print("Prediction:", prediction)
```

Sample data.csv file

```
age,income,student,credit_rating,buy_computer
30,45000,0,10,0
32,54000,0,100,0
35,61000,1,10,1
40,65000,0,50,1
45,75000,0,100,0
```

Viva Questions:

1. What is Naive Bayes and how does it work?

2. Can you discuss the different types of Naive Bayes models?

3. Why is Naive Bayes considered "naive"?

4. What are the advantages and disadvantages of using Naive Bayes?

5. Can you give some real-world examples where Naive Bayes has been applied successfully?

Result:

Thus the Python program for implementing Naïve Bayes model was developed and the output was verified successfully.