**8. To implement Naïve Bayes Algorithm.**

# Step 1: Import required libraries

import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

import seaborn as sns

from sklearn.model\_selection import train\_test\_split

from sklearn.naive\_bayes import GaussianNB

from sklearn.metrics import confusion\_matrix, classification\_report, accuracy\_score

# Step 2: Load the dataset

df = pd.read\_csv('/content/naive\_bayes\_dataset.csv')

print("First 5 rows of the dataset:")

print(df.head())

# Step 3: Explore the dataset

print("\nDataset Info:")

print(df.info())

print("\nMissing values:")

print(df.isnull().sum())

# Step 4: Encode categorical variables if necessary

# For example, if there's a 'Gender' column:

if 'Gender' in df.columns:

df['Gender'] = df['Gender'].map({'Male': 0, 'Female': 1})

# Step 5: Define features and target

# Assume the last column is the target

X = df.iloc[:, :-1] # All columns except last

y = df.iloc[:, -1] # Last column as target

# Step 6: Train-test split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Step 7: Train Naive Bayes Model

model = GaussianNB()

model.fit(X\_train, y\_train)

# Step 8: Predictions

y\_pred = model.predict(X\_test)

# Step 9: Evaluation

print("\nConfusion Matrix:")

print(confusion\_matrix(y\_test, y\_pred))

print("\nClassification Report:")

print(classification\_report(y\_test, y\_pred))

print("\nAccuracy Score:")

print(accuracy\_score(y\_test, y\_pred))