**MLA0201-Fundamentals of Machine Learning**

**Name:Kaviya Kumara K (192425055)**

Experiment 6:

Write a program to implement Naïve Bayes algorithm in python and to display the results using confusion matrix and accuracy.

**Code:**

import pandas as pd

import matplotlib.pyplot as plt

from sklearn.naive\_bayes import GaussianNB

from sklearn.preprocessing import LabelEncoder

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

from sklearn.metrics import accuracy\_score, confusion\_matrix, ConfusionMatrixDisplay

data = pd.read\_csv("car\_data.csv")

X = data.iloc[:, :-1].copy()

y = data.iloc[:, -1]

encoders = {}

for column in X.columns:

if X[column].dtype == 'object':

encoders[column] = LabelEncoder()

X[column] = encoders[column].fit\_transform(X[column])

target\_encoder = LabelEncoder()

y = target\_encoder.fit\_transform(y)

X\_train, X\_test, y\_train, y\_test = train\_test\_split(

X, y, test\_size=0.3, random\_state=1

)

model = GaussianNB()

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

print("Naïve Bayes model trained successfully")

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

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

print("Model Accuracy:", accuracy)

cm = confusion\_matrix(y\_test, y\_pred)

disp = ConfusionMatrixDisplay(

confusion\_matrix=cm,

display\_labels=target\_encoder.classes\_

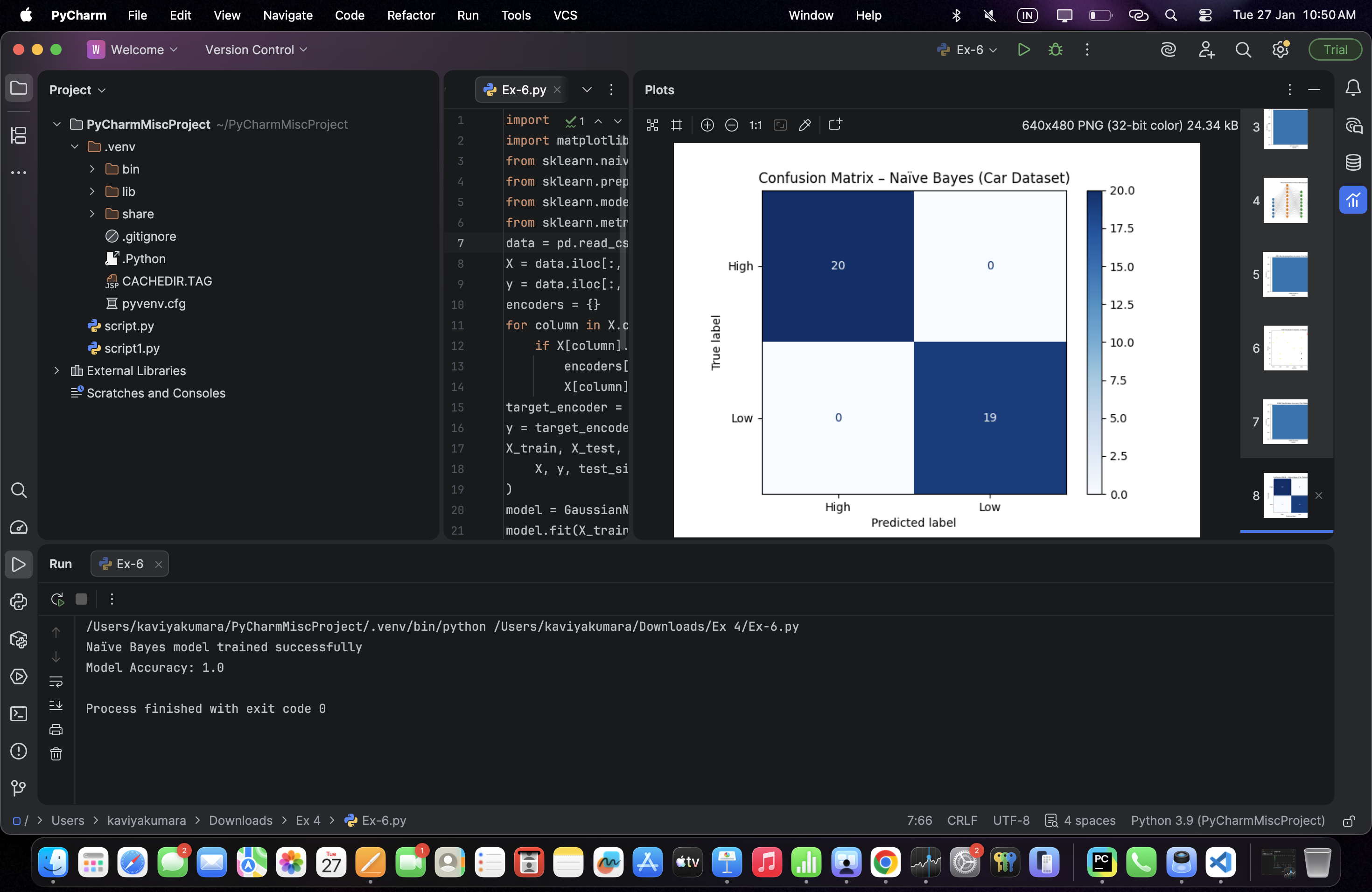
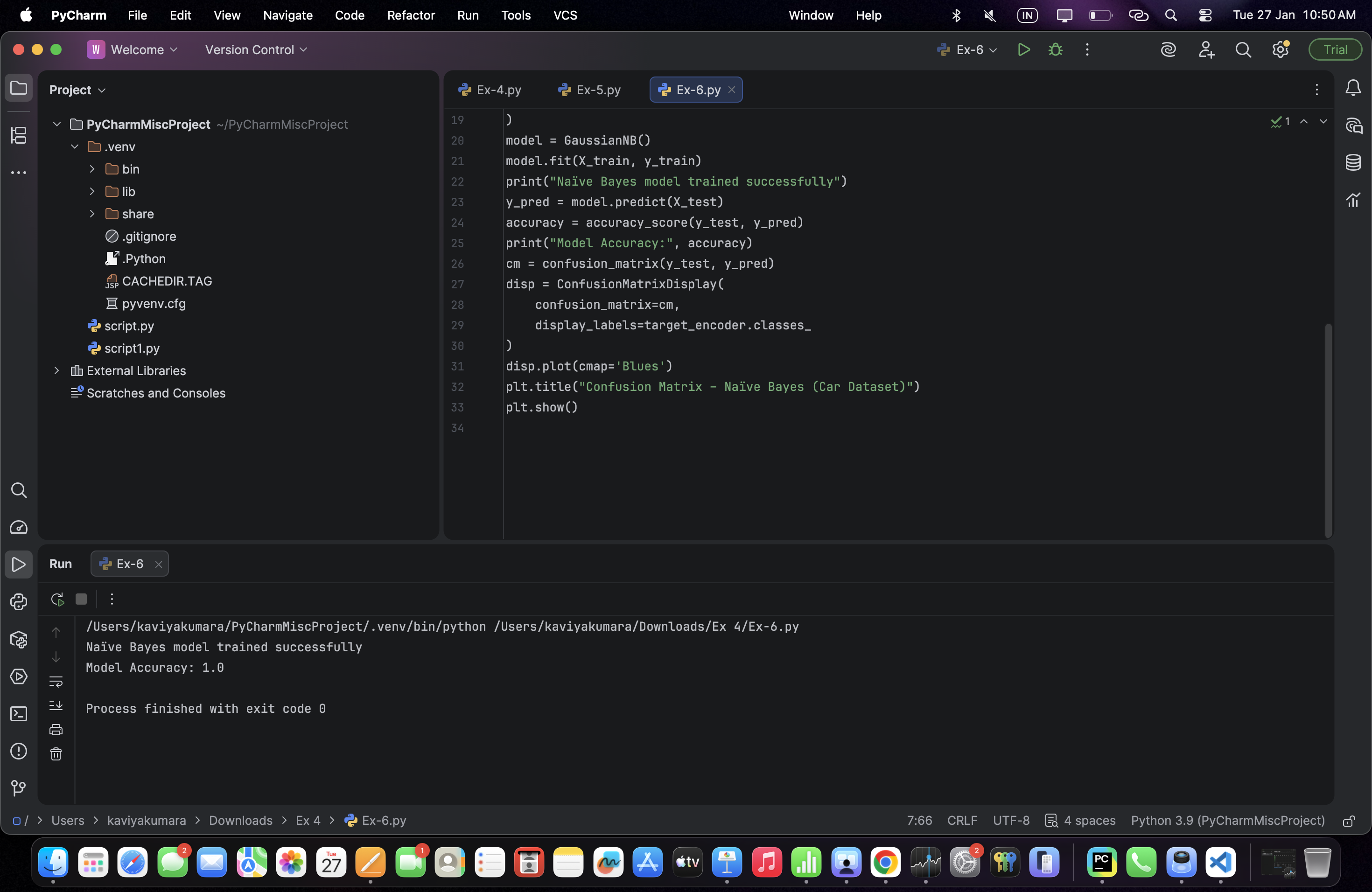
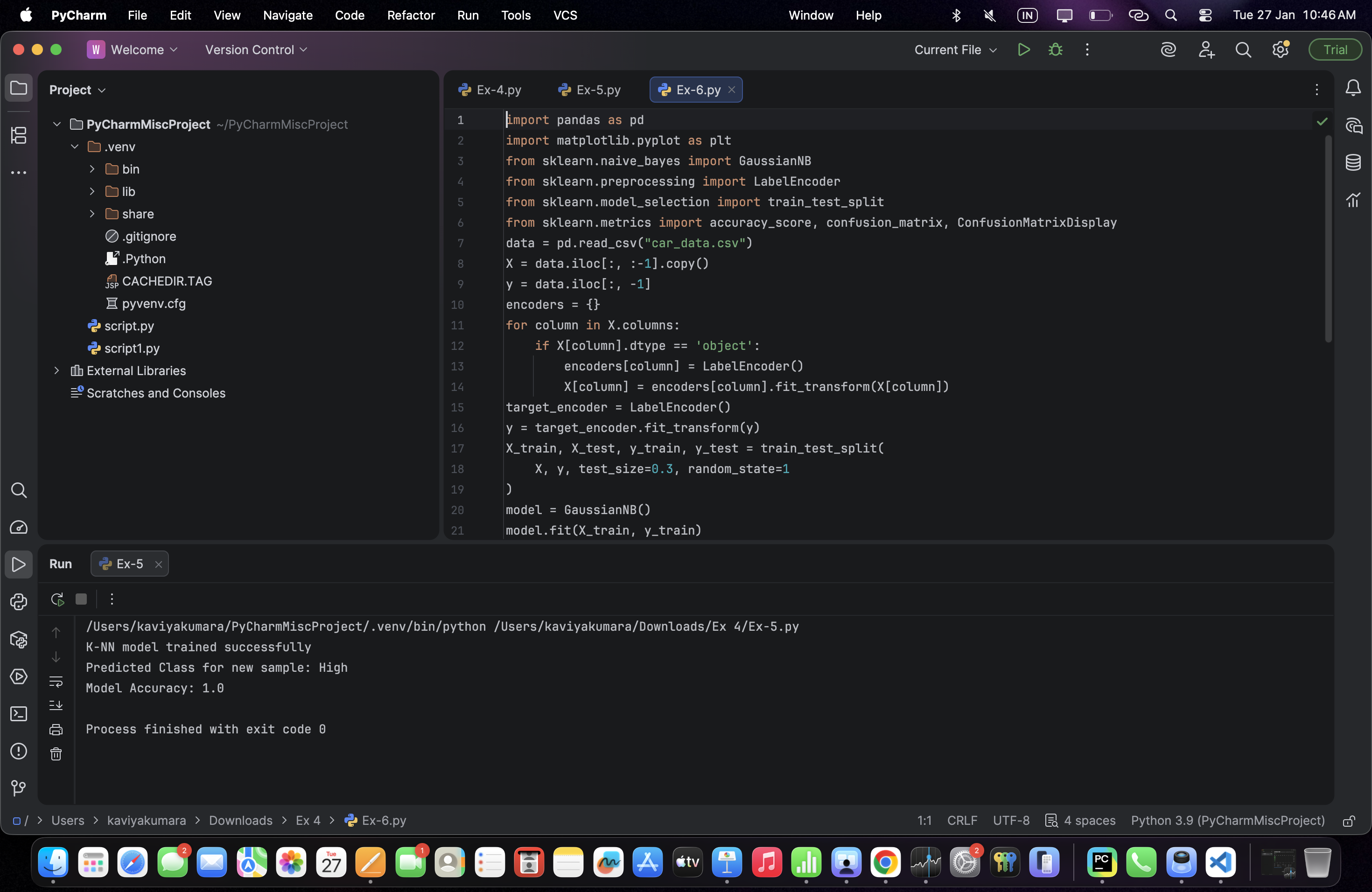
)

disp.plot(cmap='Blues')

plt.title("Confusion Matrix – Naïve Bayes (Car Dataset)")

plt.show()

**Output:**

****