import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

df=pd.read\_csv('Iris.csv')

df.head()

df.tail()

df.describe()

df.shape

x=df.drop("Species",axis=1)

y=df["Species"]

y.value\_counts()

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

x\_train,x\_test,y\_train,y\_test=train\_test\_split(x,y,random\_state=2529,test\_size=0.25)

print("X train Shape : ",x\_train.shape)

print("X test Shape : ",x\_test.shape)

from sklearn.naive\_bayes import GaussianNB

gnb = GaussianNB()

gnb.fit(x\_train,y\_train)

y\_pred=gnb.predict(x\_test)

y\_pred

from sklearn.metrics import

confusion\_matrix,accuracy\_score,classification\_report

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

fig,ax=plt.subplots(figsize=(10,10))

sns.heatmap(cm, annot=True, fmt='d', cmap='coolwarm', ax=ax)

ax.set\_title('Confusion Matrix')

ax.set\_xlabel('Predicted')

ax.set\_ylabel('True')

plt.show()

print("Accuracy Score : ",accuracy\_score(y\_test,y\_pred))

#predicts the probabilities of the target classes

gnb.predict\_proba(x\_test)

newl=[[4.5,2.9,3.1,0.4,1.2]]

print("Row1 prediction: ", gnb.predict(newl)[0])

#used to extract the predicted class label from the array

newl=[[5.5,3.1,1.0,0.8,0.5]]

print("Row2 Prediction : ",gnb.predict(newl)[0])

newl=[[6.5,3.3,4.9,1.8,5.6]]

print("Row3 Prediction : ",gnb.predict(newl)[0])

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