**Assignment No: 07**

**Assignment Name: Write a program to implement the naïve Baysian Classifier.**

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

from sklearn.datasets import load\_iris

data\_i = load\_iris()

df=pd.DataFrame(data\_i.data,columns=data\_i.feature\_names)

df['target'] = data\_i.target

print(df)

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

X=df[data\_i.feature\_names]

y=df['target']

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

from sklearn.preprocessing import StandardScaler

sc = StandardScaler()

X\_train = sc.fit\_transform(X\_train)

X\_test = sc.transform(X\_test)

## naive bayes claassifier using Gaussian Function

from sklearn.naive\_bayes import GaussianNB

classifier = GaussianNB()

classifier.fit(X\_train, y\_train)

y\_pred = classifier.predict(X\_test)

y\_pred

from sklearn.metrics import confusion\_matrix

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

from sklearn.metrics import accuracy\_score

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

print(cm)

df = pd.DataFrame({'Real Values':y\_test, 'Predicted Values':y\_pred})

print(df)

**Output :**

sepal length (cm) sepal width (cm) petal length (cm) petal width (cm) \

0 5.1 3.5 1.4 0.2

1 4.9 3.0 1.4 0.2

2 4.7 3.2 1.3 0.2

3 4.6 3.1 1.5 0.2

4 5.0 3.6 1.4 0.2

.. ... ... ... ...

145 6.7 3.0 5.2 2.3

146 6.3 2.5 5.0 1.9

147 6.5 3.0 5.2 2.0

148 6.2 3.4 5.4 2.3

149 5.9 3.0 5.1 1.8

target

0 0

1 0

2 0

3 0

4 0

.. ...

145 2

146 2

147 2

148 2

149 2

[150 rows x 5 columns]

Accuracy : 0.9333333333333333

[[11 0 0]

[ 0 8 2]

[ 0 0 9]]

Real Values Predicted Values

126 2 2

90 1 1

77 1 2

146 2 2

32 0 0

5 0 0

30 0 0

35 0 0

68 1 1

17 0 0

24 0 0

36 0 0

70 1 2

49 0 0

141 2 2

93 1 1

69 1 1

39 0 0

103 2 2

84 1 1

113 2 2

43 0 0

138 2 2

51 1 1

117 2 2

107 2 2

111 2 2

80 1 1

47 0 0

65 1 1