PRACTICAL NO: 06 DATA ANALYICS 3

CODE:

```
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
data=pd.read_csv(r"E:\DSBDA\DSBDA Datasets\iris.csv")
print(data)
x=data.iloc[:,:4].values
y=data['species'].values
data.head(5)
from sklearn.model_selection import train_test_split
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)
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))
df=pd.DataFrame({'Real Values':y_test, 'Predicted Values':y_pred})
print(df)

OUTPUT:

runfile('E:/DSBDA/dsbdapr6.py', wdir='E:/DSBDA')

sepal_length sepal_width petal_length petal_width species 0 5.1 3.5 1.4 0.2 setosa 1 4.9 3.0 1.4 0.2 setosa 2 4.7 3.2 0.2 1.3 setosa 3 4.6 3.1 1.5 0.2 setosa 4 5.0 3.6 0.2 1.4 setosa • • • ... 145 6.7 3.0 5.2 2.3 virginica

5.0

5.2

5.4

5.1

1.9 virginica

2.0 virginica

2.3 virginica

1.8 virginica

[150 rows x 5 columns]

6.3

6.5

6.2

5.9

2.5

3.0

3.4

3.0

Accuracy: 0.9

146

147

148

149

Real Values Predicted Values

0 virginica virginica

1 versicolor versicolor

2 virginica virginica

3	virginica	virginica
4	virginica	virginica
5	setosa	setosa

6 setosa setosa

7 virginica virginica

8 setosa setosa

9 setosa setosa

10 virginica virginica

11 virginica virginica

12 versicolor versicolor

13 versicolor virginica

14 setosa setosa

15 versicolor virginica

16 versicolor versicolor

17 setosa setosa

18 versicolor versicolor

19 versicolor versicolor

20 versicolor versicolor

21 versicolor virginica

22 virginica virginica

23 setosa setosa

24 versicolor versicolor

25 virginica virginica

26 versicolor versicolor

27 virginica virginica

28 virginica virginica

29 versicolor versicolor

data.head(5)

```
Out[2]:
 sepal length sepal width petal length petal width species
0
        5.1
                 3.5
                           1.4
                                    0.2 setosa
1
       4.9
                 3.0
                           1.4
                                    0.2 setosa
2
       4.7
                           1.3
                                    0.2 setosa
                 3.2
3
       4.6
                 3.1
                           1.5
                                    0.2 setosa
4
        5.0
                 3.6
                           1.4
                                    0.2 setosa
y_pred
Out[3]:
array(['virginica', 'versicolor', 'virginica', 'virginica', 'virginica',
    'setosa', 'setosa', 'virginica', 'setosa', 'setosa', 'virginica',
    'virginica', 'versicolor', 'virginica', 'setosa', 'virginica',
    'versicolor', 'setosa', 'versicolor', 'versicolor', 'versicolor',
    'virginica', 'virginica', 'setosa', 'versicolor', 'virginica',
    'versicolor', 'virginica', 'virginica', 'versicolor'], dtype='<U10')
print("Accuracy :",accuracy_score(y_test,y_pred))
Accuracy: 0.9
df=pd.DataFrame({'Real Values':y_test, 'Predicted Values':y_pred})
print(df)
 Real Values Predicted Values
0 virginica
                 virginica
1 versicolor
                 versicolor
2 virginica
                 virginica
3 virginica
                 virginica
4 virginica
                 virginica
```

- 5 setosa setosa
- 6 setosa setosa
- 7 virginica virginica
- 8 setosa setosa
- 9 setosa setosa
- 10 virginica virginica
- 11 virginica virginica
- 12 versicolor versicolor
- 13 versicolor virginica
- 14 setosa setosa
- 15 versicolor virginica
- 16 versicolor versicolor
- 17 setosa setosa
- 18 versicolor versicolor
- 19 versicolor versicolor
- 20 versicolor versicolor
- 21 versicolor virginica
- 22 virginica virginica
- 23 setosa setosa
- 24 versicolor versicolor
- 25 virginica virginica
- 26 versicolor versicolor
- 27 virginica virginica
- 28 virginica virginica
- 29 versicolor versicolor

print("Accuracy :",accuracy_score(y_test,y_pred))

Accuracy: 0.9

OUTPUT:

```
27
     virginica
                     virginica
28
    virginica
                     virginica
29 versicolor
                    versicolor
In [2]: data.head(5)
   sepal_length sepal_width petal_length petal_width species
                       3.5
                                    1.4
                                                0.2 setosa
           5.1
                       3.0
                                     1.4
           4.9
                                                 0.2 setosa
           4.7
                                                 0.2 setosa
           4.6
                       3.1
                                     1.5
                                                 0.2 setosa
           5.0
                       3.6
                                     1.4
                                                 0.2 setosa
In [3] | y_pred
In [4]: print("Accuracy :",accuracy_score(y_test,y_pred))
Accuracy: 0.9
In [5]: df=pd.DataFrame({'Real Values':y_test, 'Predicted Values':y_pred})
In [6]: print(df)
   Real Values Predicted Values
    virginica
    versicolor
                    versicolor
    virginica
                    virginica
                                                Python Console History
Console 1/A X
                                                                                                  п
[150 rows x 5 columns]
Accuracy: 0.9
  Real Values Predicted Values
    virginica
                   virginica
   versicolor
                   versicolor
    virginica
                    virginica
    virginica
                    virginica
    virginica
                    virginica
      setosa
                       setosa
       setosa
                       setosa
                    virginica
    virginica
       setosa
                       setosa
       setosa
                       setosa
                    virginica
10
    virginica
    virginica
11
                    virginica
12
   versicolor
                   versicolor
   versicolor
                    virginica
14
       setosa
                       setosa
   versicolor
                    virginica
   versicolor
                   versicolor
      setosa
                      setosa
18 versicolor
                   versicolor
   versicolor
                   versicolor
   versicolor
                   versicolor
   versicolor
                    virginica
                    virginica
    virginica
       setosa
23
                       setosa
24
   versicolor
                   versicolor
    virginica
                    virginica
   versicolor
                   versicolor
26
    virginica
                    virginica
27
28
   virginica
                    virginica
29 versionler
                   weesicolor
                                               Python Console History
```

```
In [1]: runfile('E:/DSBDA/dsbdupr6.py', wdir='E:/DSBDA')
    sepal_length sepal_width petal_length petal_width
                                                                    species
                                              1,4
                                                           0.2
                                                                     setosa
               4.9
                              3.0
                                              1.4
                                                            0.2
                                                                     setosa
1 2 3 4
               4.7
                              3.2
                                                            0.2
                                                                     setosa
               4.6
                                                            0.2
                                                                     setosa
               5.0
                              3.6
                                              1.4
                                                            0.2
                                                                     setosa
...
145
                                              5.2
                              3.0
                                                                 virginica
                                                                 virginica
146
               6.3
                              2.5
                                              5.0
                                                            1.9
147
               6.5
                              3.0
                                                            2.0
                                              5.2
                                                                 virginica
148
               6.2
                              3.4
                                              5.4
                                                            2.3
                                                                 virginica
149
               5.9
                              3.0
                                              5.1
                                                            1.8
                                                                 virginica
[150 rows x 5 columns]
Accuracy : 0.9
Real Values Predicted Values
0
     virginica
                        virginica
                       versicolor
    versicolor
     virginica
                        virginica
     virginica
                        virginica
     virginica
                        virginica
         setosa
                            setosa
         setosa
                            setosa
     virginica
                         virginica
8
        setosa
                           setosa
         setosa
                           setosa
10
     virginica
                        virginica
     virginica
                        virginica
    versicolor
                       versicolor
    versicolor
                        virginica
         setosa
                            setosa
                                                        IPython Console: History
                                                                                                                     П
     Console 1/A X
 In [6]: print(df)
  Real Values Predicted Values
     virginica
                        virginica
a
     versicolor
                        versicolor
      virginica
                         virginica
      virginica
                         virginica
      virginica
                         virginica
          setosa
                             setosa
          setosa
                            setosa
      virginica
                         virginica
          setosa
                            setosa
          setosa
                            setosa
 10
      virginica
                         virginica
      virginica
                         virginica
     versicolor
                        versicolor
     versicolor
                         virginica
 14
     versicolor
 15
                         virginica
     versicolor
                        versicolor
 16
         setosa
                            setosa
     versicolor
                        versicolor
 18
     versicolor
                        versicolor
     versicolor
 20
                        versicolor
 21
     versicolor
                         virginica
      virginica
                         virginica
          setosa
                            setosa
     versicolor
                        versicolor
      virginica
                         virginica
     versicolor
                        versicolor
      virginica
                         virginica
      virginica
                         virginica
     versicolor
                        versicolor
                                                         IFythor Console History
```