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           1.3          0.2     setosa
3             4.6          3.1           1.5          0.2     setosa
4             5.0          3.6           1.4          0.2     setosa
..            ...          ...           ...          ...        ...
145           6.7          3.0           5.2          2.3  virginica
146           6.3          2.5           5.0          1.9  virginica
147           6.5          3.0           5.2          2.0  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
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	3.2	1.3	0.2	setosa
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)
```

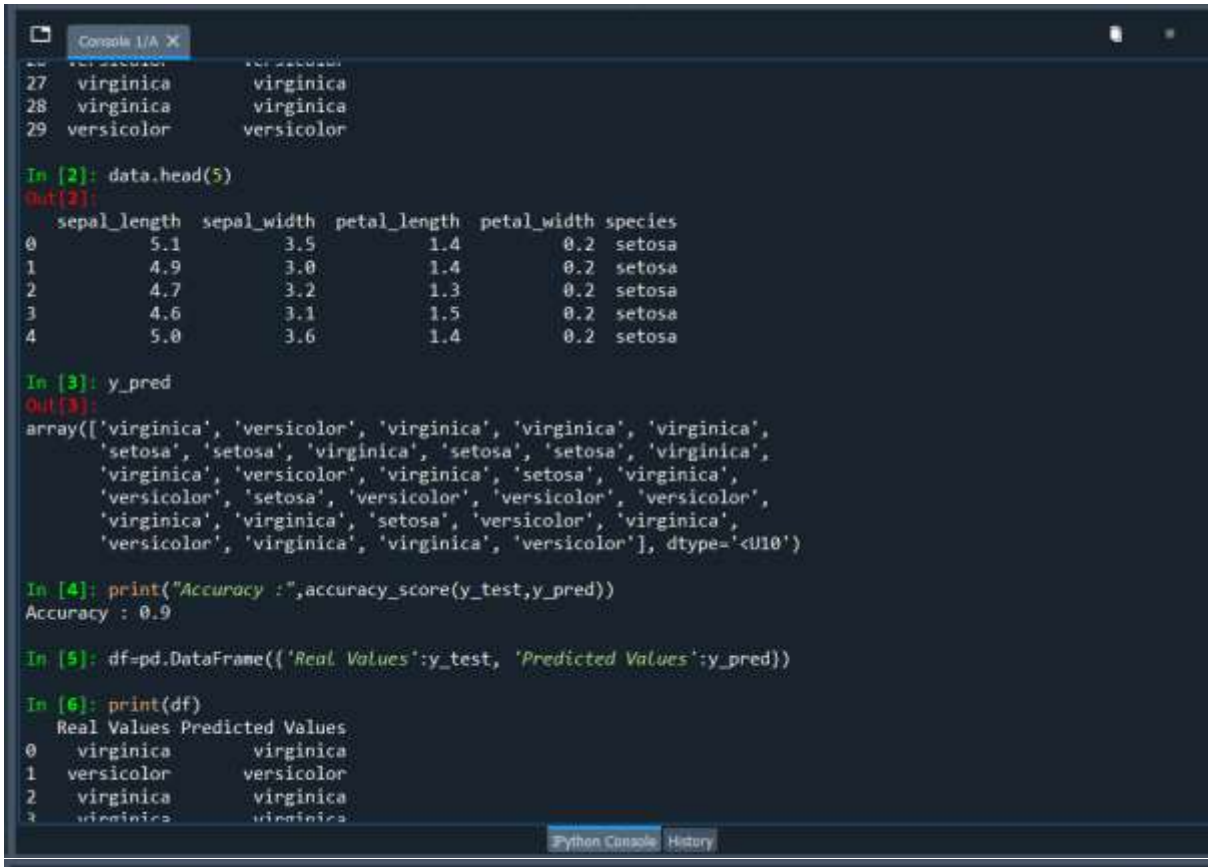
	Real Values	Predicted Values
0	virginica	virginica
1	versicolor	versicolor
2	virginica	virginica
3	virginica	virginica
4	virginica	virginica

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))
```

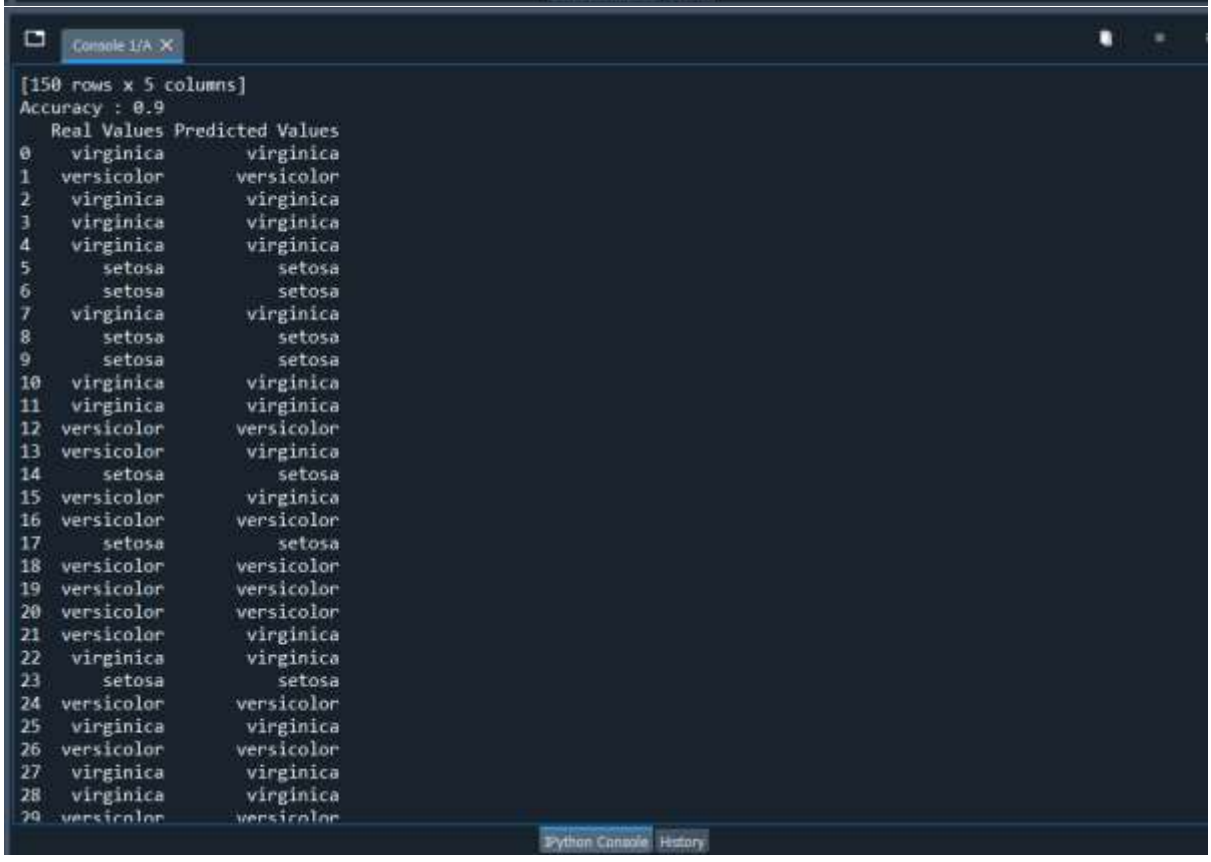
```
Accuracy : 0.9
```

OUTPUT :



```
Console 1/A
27   virginica       virginica
28   virginica       virginica
29  versicolor      versicolor

In [2]: 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          3.2           1.3          0.2  setosa
3           4.6          3.1           1.5          0.2  setosa
4           5.0          3.6           1.4          0.2  setosa

In [3]: 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')

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
0    virginica       virginica
1   versicolor      versicolor
2    virginica       virginica
3    virginica       virginica
```

IPython Console | History



```
Console 1/A
[150 rows x 5 columns]
Accuracy : 0.9
   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
```

IPython Console | History

```
In [1]: 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           1.3          0.2     setosa
3             4.6          3.1           1.5          0.2     setosa
4             5.0          3.6           1.4          0.2     setosa
..            ...          ...           ...          ...        ...
145           6.7          3.0           5.2          2.3  virginica
146           6.3          2.5           5.0          1.9  virginica
147           6.5          3.0           5.2          2.0  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
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
```

IPython Console History

Console 1/A

```
In [6]: 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
```

IPython Console History