

```
In [ ]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

```
In [ ]: import seaborn as sns
phool = sns.load_dataset("iris")
phool.head()
```

```
Out[ ]:   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 [ ]: X= phool.iloc[:, :-1]
y= phool.iloc[:, -1:]
```

```
In [ ]: from sklearn.naive_bayes import GaussianNB
model = GaussianNB().fit(X,y)
model
```

C:\Users\Sehrish\anaconda3\lib\site-packages\sklearn\utils\validation.py:63: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples,), for example using ravel().

```
return f(*args, **kwargs)
```

```
Out[ ]: GaussianNB()
```

```
In [ ]: from sklearn.model_selection import train_test_split
X_trian, X_test, y_trian, y_test = train_test_split(X,y,test_size = 0.2, random_state = 0)
```

```
In [ ]: from sklearn.naive_bayes import GaussianNB
model = GaussianNB().fit(X_trian, y_trian)
y_pred = model.predict(X_test)
y_pred
```

C:\Users\Sehrish\anaconda3\lib\site-packages\sklearn\utils\validation.py:63: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples,), for example using ravel().

```
return f(*args, **kwargs)
```

```
Out[ ]: array(['virginica', 'versicolor', 'setosa', 'virginica', 'setosa',
        'virginica', 'setosa', 'versicolor', 'versicolor', 'versicolor',
        'versicolor', 'versicolor', 'versicolor', 'versicolor',
        'versicolor', 'setosa', 'versicolor', 'versicolor', 'setosa',
        'setosa', 'virginica', 'versicolor', 'setosa', 'setosa',
        'virginica', 'setosa', 'setosa', 'versicolor', 'versicolor',
        'setosa'], dtype='<U10')
```

```
In [ ]: from sklearn import metrics
score = metrics.accuracy_score(y_test, y_pred)
print("Gaussian Naview Bayes Model Accuracy(in %) is:", metrics.accuracy_score(y_test, y_pred))
```

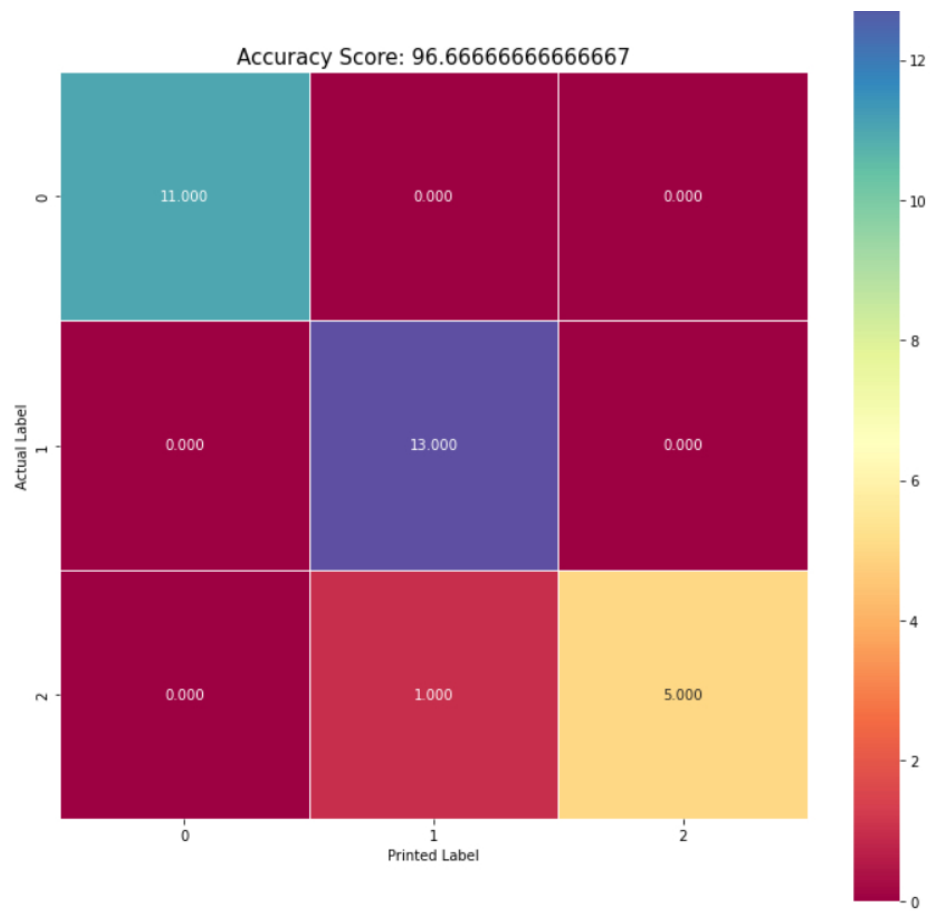
```
Gaussian Naview Bayes Model Accuracy(in %) is: 0.9666666666666667
```

```
In [ ]: from sklearn import metrics
cm = metrics.confusion_matrix(y_test, y_pred)
cm
```

```
Out[ ]: array([[11,  0,  0],
        [ 0, 13,  0],
        [ 0,  1,  5]], dtype=int64)
```

```
In [ ]: # heat map
import seaborn as sns
plt.figure(figsize=(12,12))
sns.heatmap(cm, annot=True, fmt = ".3f", linewidths=.5, square = True, cmap = 'Spectral')
plt.ylabel("Actual Label");
plt.xlabel("Printed Label");
all_sample_title = "Accuracy Score: {0}".format(score*100)
plt.title(all_sample_title, size = 15)
```

```
Out[ ]: Text(0.5, 1.0, 'Accuracy Score: 96.66666666666667')
```



In []: