

```
In [2]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import sklearn
from sklearn.preprocessing import StandardScaler
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn.naive_bayes import GaussianNB
```

```
In [3]: data=pd.read_csv('iris.csv')
```

```
In [5]: data.head()
```

Out[5]:

	sepal.length	sepal.width	petal.length	petal.width	variety
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 [7]: x=data.iloc[:, :4]
x.head()
```

Out[7]:

	sepal.length	sepal.width	petal.length	petal.width
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

```
In [8]: y=data.iloc[:, -1]
y.head()
```

Out[8]:

0	Setosa
1	Setosa
2	Setosa
3	Setosa
4	Setosa

Name: variety, dtype: object

```
In [9]: x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=.20)
```

```
In [10]: x_train.head()
```

```
Out[10]:
```

	sepal.length	sepal.width	petal.length	petal.width
89	5.5	2.5	4.0	1.3
63	6.1	2.9	4.7	1.4
114	5.8	2.8	5.1	2.4
146	6.3	2.5	5.0	1.9
134	6.1	2.6	5.6	1.4

```
In [12]: x_test.head()
```

```
Out[12]:
```

	sepal.length	sepal.width	petal.length	petal.width
141	6.9	3.1	5.1	2.3
76	6.8	2.8	4.8	1.4
91	6.1	3.0	4.6	1.4
103	6.3	2.9	5.6	1.8
121	5.6	2.8	4.9	2.0

```
In [13]: sc=StandardScaler()  
sc.fit(x_train)  
x_train=sc.transform(x_train)  
x_test=sc.transform(x_test)
```

```
In [42]: classifier=KNeighborsClassifier(n_neighbors=5)
```

```
In [43]: classifier.fit(x_train,y_train)
```

```
Out[43]: KNeighborsClassifier()
```

```
In [44]: y_pred=classifier.predict(x_test)
```

```
In [45]: y_pred
```

```
Out[45]: array(['Virginica', 'Versicolor', 'Versicolor', 'Virginica', 'Virginica',  
                'Versicolor', 'Setosa', 'Versicolor', 'Setosa', 'Virginica',  
                'Setosa', 'Versicolor', 'Virginica', 'Versicolor', 'Virginica',  
                'Virginica', 'Setosa', 'Virginica', 'Virginica', 'Setosa',  
                'Versicolor', 'Versicolor', 'Setosa', 'Versicolor', 'Virginica',  
                'Virginica', 'Virginica', 'Versicolor', 'Setosa', 'Versicolor'],  
             dtype=object)
```

```
In [46]: y_test
```

```
Out[46]: 141    Virginica
          76    Versicolor
          91    Versicolor
          103   Virginica
          121   Virginica
          98    Versicolor
          29     Setosa
          58    Versicolor
          23     Setosa
          119   Virginica
          27     Setosa
          53    Versicolor
          124   Virginica
          87    Versicolor
          147   Virginica
          137   Virginica
          38     Setosa
          127   Virginica
          109   Virginica
          42     Setosa
          73    Versicolor
          96    Versicolor
          26     Setosa
          94    Versicolor
          72    Versicolor
          129   Virginica
          144   Virginica
          71    Versicolor
          46     Setosa
          88    Versicolor
          Name: variety, dtype: object
```

```
In [47]: from sklearn.metrics import confusion_matrix, accuracy_score
          cm=confusion_matrix(y_test,y_pred)
          ac=accuracy_score(y_test,y_pred)
```

```
In [48]: cm
```

```
Out[48]: array([[ 7,  0,  0],
                [ 0, 11,  1],
                [ 0,  0, 11]], dtype=int64)
```

```
In [49]: ac
```

```
Out[49]: 0.9666666666666667
```

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In [ ]:
```

```
In [ ]:
```

In []: