

```
In [1]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [2]: iris=pd.read_csv("C:/Users/USER/Desktop/Datasets/iris_csv.csv")
iris
```

```
Out[2]:
```

	sepalength	sepalwidth	petallength	petalwidth	class
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

```
In [3]: iris.describe()
```

```
Out[3]:
```

	sepalength	sepalwidth	petallength	petalwidth
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

```
In [4]: iris_sts = iris.iloc[0:50,0:5]
iris_vsc = iris.iloc[50:100,0:5]
iris_vgc = iris.iloc[100:150,0:5]
```

```
In [5]: a= pd.DataFrame(iris_sts.iloc[0:25,0:5])
b= pd.DataFrame(iris_sts.iloc[25:50,0:5])
c= pd.DataFrame(iris_vsc.iloc[0:25,0:5])
d= pd.DataFrame(iris_vsc.iloc[25:50,0:5])
e= pd.DataFrame(iris_vgc.iloc[0:25,0:5])
f= pd.DataFrame(iris_vgc.iloc[25:50,0:5])
```

```
In [6]: train_iris=pd.concat([a,c,e])
test_iris=pd.concat([b,d,f])
```

```
In [7]: x_train=train_iris.iloc[:,0:4]
x_test=test_iris.iloc[:,0:4]
y_train=train_iris.iloc[:,4]
y_test=test_iris.iloc[:,4]
```

```
In [8]: x_train
```

```
Out[8]:
```

	sepalength	sepalwidth	petallength	petalwidth
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
...
120	6.9	3.2	5.7	2.3
121	5.6	2.8	4.9	2.0
122	7.7	2.8	6.7	2.0
123	6.3	2.7	4.9	1.8
124	6.7	3.3	5.7	2.1

75 rows × 4 columns

```
In [9]: y_train
```

```
Out[9]: 0      Iris-setosa
1      Iris-setosa
2      Iris-setosa
3      Iris-setosa
4      Iris-setosa
...
120    Iris-virginica
121    Iris-virginica
122    Iris-virginica
123    Iris-virginica
124    Iris-virginica
Name: class, Length: 75, dtype: object
```

In [10]: `x_test`

Out[10]:

	sepalength	sepalwidth	petallength	petalwidth
25	5.0	3.0	1.6	0.2
26	5.0	3.4	1.6	0.4
27	5.2	3.5	1.5	0.2
28	5.2	3.4	1.4	0.2
29	4.7	3.2	1.6	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

75 rows × 4 columns

In [11]: `y_test`

Out[11]:

25	Iris-setosa
26	Iris-setosa
27	Iris-setosa
28	Iris-setosa
29	Iris-setosa
...	...
145	Iris-virginica
146	Iris-virginica
147	Iris-virginica
148	Iris-virginica
149	Iris-virginica

Name: class, Length: 75, dtype: object

In [12]: `from sklearn.tree import DecisionTreeClassifier`
`clf=DecisionTreeClassifier(criterion ="entropy")`

In [14]: `clf.fit(x_train, y_train)`

Out[14]: `DecisionTreeClassifier(criterion='entropy')`

```
In [17]: y_pred = clf.predict(x_test)
y_pred
```

```
Out[17]: array(['Iris-setosa', 'Iris-setosa', 'Iris-setosa', 'Iris-setosa',
'Iris-setosa', 'Iris-setosa', 'Iris-setosa', 'Iris-setosa',
'Iris-setosa', 'Iris-setosa', 'Iris-setosa', 'Iris-setosa',
'Iris-setosa', 'Iris-setosa', 'Iris-setosa', 'Iris-setosa',
'Iris-setosa', 'Iris-setosa', 'Iris-setosa', 'Iris-setosa',
'Iris-setosa', 'Iris-versicolor', 'Iris-versicolor',
'Iris-virginica', 'Iris-versicolor', 'Iris-versicolor',
'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
'Iris-virginica', 'Iris-versicolor', 'Iris-versicolor',
'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
'Iris-versicolor', 'Iris-versicolor', 'Iris-virginica',
'Iris-versicolor', 'Iris-virginica', 'Iris-virginica',
'Iris-virginica', 'Iris-virginica', 'Iris-virginica',
'Iris-virginica', 'Iris-virginica', 'Iris-virginica',
'Iris-virginica', 'Iris-virginica', 'Iris-virginica',
'Iris-versicolor', 'Iris-virginica', 'Iris-virginica',
'Iris-virginica', 'Iris-virginica', 'Iris-virginica',
'Iris-virginica', 'Iris-virginica', 'Iris-virginica',
'Iris-virginica', 'Iris-virginica', 'Iris-virginica'], dtype=object)
```

```
In [19]: from sklearn.metrics import confusion_matrix, accuracy_score
cm = confusion_matrix(y_test, y_pred)
Accuracy_Score = accuracy_score(y_test, y_pred)
```

```
In [20]: cm
```

```
Out[20]: array([[25,  0,  0],
[ 0, 23,  2],
[ 0,  2, 23]], dtype=int64)
```

```
In [21]: Accuracy_Score
```

```
Out[21]: 0.9466666666666667
```

```
In [ ]:
```