In [1]:
```
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn import datasets
iris=datasets.load_iris()
print("Iris Data set loaded...")
x_train, x_test, y_train, y_test = train_test_split(iris.data,iris.targ
et,test_size=0.1)
print("Dataset is split into training and testing...")
print("Size of trainng data and its label",x_train.shape,y_train.shape)
print("Size of trainng data and its label",x_test.shape, y_test.shape)
for i in range(len(iris.target_names)):
 print("Label", i , "-",str(iris.target_names[i]))
classifier = KNeighborsClassifier(n_neighbors=1)
classifier.fit(x_train, y_train)
y_pred=classifier.predict(x_test)
print("Results of Classification using K-nn with K=1 ")
for r in range(0,len(x_test)):
 print(" Sample:", str(x_test[r]), " Actual-label:", str(y_test[r]), "
 Predicted-label:",
str(y_pred[r]))
print("Classification Accuracy :" , classifier.score(x_test,y_test));
from sklearn.metrics import classification_report, confusion_matrix
print('Confusion Matrix')
print(confusion_matrix(y_test,y_pred))
print('Accuracy Metrics')
print(classification_report(y_test,y_pred))
```

```
Iris Data set loaded...
Dataset is split into training and testing...
Size of trainng data and its label (135, 4) (135,)
Size of trainng data and its label (15, 4) (15,)
Label 0 - setosa
Label 1 - versicolor
Label 2 - virginica
Results of Classification using K-nn with K=1
 Sample: [5.9 3.  5.1 1.8]  Actual-label: 2  Predicted-label: 2
 Sample: [6.  2.2 5.  1.5]  Actual-label: 2  Predicted-label: 1
```

```
 Sample: [5.5 2.4 3.7 1. ]  Actual-label: 1  Predicted-label: 1

 Sample: [5.5 2.3 4.  1.3]  Actual-label: 1  Predicted-label: 1
 Sample: [4.3 3.  1.1 0.1]  Actual-label: 0  Predicted-label: 0
 Sample: [6.9 3.1 5.4 2.1]  Actual-label: 2  Predicted-label: 2
 Sample: [6.2 2.8 4.8 1.8]  Actual-label: 2  Predicted-label: 2
 Sample: [6.4 2.9 4.3 1.3]  Actual-label: 1  Predicted-label: 1
 Sample: [6.5 3.  5.2 2. ]  Actual-label: 2  Predicted-label: 2
 Sample: [6.7 3.  5.  1.7]  Actual-label: 1  Predicted-label: 1
 Sample: [5.6 2.9 3.6 1.3]  Actual-label: 1  Predicted-label: 1
 Sample: [6.8 2.8 4.8 1.4]  Actual-label: 1  Predicted-label: 1
 Sample: [6.7 3.  5.2 2.3]  Actual-label: 2  Predicted-label: 2
 Sample: [5.1 3.7 1.5 0.4]  Actual-label: 0  Predicted-label: 0
 Sample: [5.7 3.  4.2 1.2]  Actual-label: 1  Predicted-label: 1
Classification Accuracy : 0.9333333333333333
Confusion Matrix
[[2 0 0]
 [0 7 0]
 [0 1 5]]
Accuracy Metrics
              precision    recall  f1-score   support

           0       1.00      1.00      1.00         2
           1       0.88      1.00      0.93         7
           2       1.00      0.83      0.91         6

    accuracy                           0.93        15
   macro avg       0.96      0.94      0.95        15
weighted avg       0.94      0.93      0.93        15
```

In [ ]:

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