```
Program-9:
Write a program to implement k-Nearest Neighbour algorithm to classify the iris
data set. Print both correct and wrong predictions. Java/Python ML library classes
can
be used for this problem.
```

In [7]:

```
from sklearn.datasets import load_iris
from sklearn.neighbors import KNeighborsClassifier
from sklearn.model_selection import train_test_split
import numpy as np
iris_dataset=load_iris()
```

In [8]:

```
dataset=load_iris()
print(dataset)
X_train,X_test,y_train,y_test=train_test_split(dataset["data"],
                                dataset["target"],random_state=0)
print("\n IRIS FEATURES \ TARGET NAMES: \n ", dataset.target_names)
print("\n IRIS DATA :\n",iris_dataset["data"])
```

```
[5.5, 4.2, 1.4, 0.2],
[4.9, 3.1, 1.5, 0.2],

[5. , 3.2, 1.2, 0.2],
[5.5, 3.5, 1.3, 0.2],
[4.9, 3.6, 1.4, 0.1],
[4.4, 3. , 1.3, 0.2],
[5.1, 3.4, 1.5, 0.2],
[5. , 3.5, 1.3, 0.3],
[4.5, 2.3, 1.3, 0.3],
[4.4, 3.2, 1.3, 0.2],
[5. , 3.5, 1.6, 0.6],
[5.1, 3.8, 1.9, 0.4],
[4.8, 3. , 1.4, 0.3],
[5.1, 3.8, 1.6, 0.2],
[4.6, 3.2, 1.4, 0.2],
[5.3, 3.7, 1.5, 0.2],
[5. , 3.3, 1.4, 0.2],
[7. , 3.2, 4.7, 1.4],
[6.4, 3.2, 4.5, 1.5],
```

In [9]:

```
print("\n Target :\n",dataset["target"])
print("\n X TRAINING DATA SET \n", X_train)
print("\n Y TRAINING DATA SET \n", y_train)
print("\n X TESTING DATA SET \n", X_test)
print("\n Y TESTING DATA SET \n", y_test)
```

```
 Target :
 [0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0
 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2
 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
 2 2]

 X TRAINING DATA SET
 [[5.9 3.  4.2 1.5]
 [5.8 2.6 4.  1.2]
 [6.8 3.  5.5 2.1]
 [4.7 3.2 1.3 0.2]
 [6.9 3.1 5.1 2.3]
 [5.  3.5 1.6 0.6]
 [5.4 3.7 1.5 0.2]
 [5.  2.  3.5 1. ]
 [6.5 3.  5.5 1.8]
```

In [10]:

```
kn=KNeighborsClassifier(n_neighbors=1)
kn.fit(X_train,y_train)
for i in range(len(X_test)):
    x=X_test[i]
    x_new=np.array([x])
    prediction=kn.predict(x_new)
    print("Actual=",y_test[i],dataset["target_names"][y_test[i]],"Predicted=",predictic
          dataset["target_names"][prediction])
print("\n the test score[accuracy]:{:.2f}\n".format(kn.score(X_test,y_test)))
```

```
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 2 virginica Predicted= [2] ['virginica']
Actual= 1 versicolor Predicted= [1] ['versicolor']
Actual= 0 setosa Predicted= [0] ['setosa']
Actual= 1 versicolor Predicted= [2] ['virginica']

 the test score[accuracy]:0.97
```

In [ ]:

```
1
```