**Assignment No.: - 6**

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

* **K-Nearest Neighbour –**
* **Code –**

import pandas as pd

from sklearn. datasets import load\_iris

data = pd.read\_csv("Iris.csv")

x = data.iloc[:,1:5]

y = data.iloc[:,-1]

from sklearn.model\_selection import train\_test\_split

x\_train, x\_test, y\_train, y\_test = train\_test\_split(x,y,train\_size=80,random\_state=1)

import numpy as np

print("The unique output values(target) and their respective count is as given below:-")

print(np.unique(y\_train,return\_counts=True))

# the default metric measure is Euclidean

from sklearn.neighbors import KNeighborsClassifier

model = KNeighborsClassifier(n\_neighbors=1)

model.fit(x\_train,y\_train)

y\_pred = model.predict(x\_test)

from sklearn.metrics import confusion\_matrix

cm = confusion\_matrix(y\_test,y\_pred)

print("\nThe confusion matrix for above model is as given below:- \n",cm)

from sklearn.metrics import accuracy\_score

acc = accuracy\_score(y\_test,y\_pred)

print("\nThe accuracy ofabove model is:- ",acc)

#compare predicted values with the actual scores

compare\_df = pd.DataFrame({'actual': y\_test, 'predicted': y\_pred})

compare\_df = compare\_df.reset\_index(drop = True)

print(“Comparing predicted values with the actual scores ”,compare\_df)

* **Output –**

The unique output values(target) and their respective count is as given below:-

(array(['Iris-setosa', 'Iris-versicolor', 'Iris-virginica'], dtype=object), array([27, 28, 25], dtype=int64))

The confusion matrix for above model is as given below:-

[[23 0 0]

[ 0 22 0]

[ 0 2 23]]

The accuracy ofabove model is:- 0.9714285714285714

Comparing predicted values with the actual scores

actual predicted

0 Iris-setosa Iris-setosa

1 Iris-versicolor Iris-versicolor

2 Iris-versicolor Iris-versicolor

3 Iris-setosa Iris-setosa

4 Iris-virginica Iris-virginica

.. ... ...

65 Iris-virginica Iris-virginica

66 Iris-setosa Iris-setosa

67 Iris-virginica Iris-virginica

68 Iris-virginica Iris-virginica

69 Iris-versicolor Iris-versicolor