Expt. No. : 7
Date : 17/08/21

Implement Logistic Regression to classify the problems.

Aim:-

To implement Logistic Regression to classify the problems.

Program:-

```
from numpy
import *import
operator
from os import
listdirimport
matplotlib
import matplotlib.pyplot
as pltimport pandas as pd
import numpy as npl
import numpy.linalg as np
from scipy.stats.stats import pearsonr
def kernel(point,xmat,k):
    m,n=npl.shape(xmat)
    weights=npl.mat(npl.eye((m)))
    for j in range(m):
      diff=point-X[j]
      weights[j,j]=npl.exp(diff*diff.T/(-2.0*k**2)
    return weights
def localWeight(point,xmat,ymat,k):
    wei=kernel(point,xmat,k)
```

```
    W = (X.T*(wei*X)).I*(X.T*(wei*ymat.T))
    return W
def localWeightRegression(xmat,ymat,k):
    m,n=np1.shape(xmat)
    ypred = np1.zeros(m)
    for i in range(m):
        ypred[i]= xmat[i]*localWeight(xmat[i],xmat,ymat,k)
    return ypred
data = pd.read_csv('data10.csv')
bill = np1.array(data.total_bill)
tip = np1.array(data.tip)
billmbill=np1.mat(bill)
mtip = np1.mat(tip)
m= np1.shape(mbill)[1]
one = np1.mat(np1.ones(m))
x = np1.hstack((one.T, mbill.T))
ypred = localWeightRegression(x, mtip, 2)
SortIndex = x[:,1].argsort(0)
xSort = x[SortIndex][:,0]
```

Result:-

Thus the program to implement logistic regression to classify the problems has been executed succesfully.

Output :-