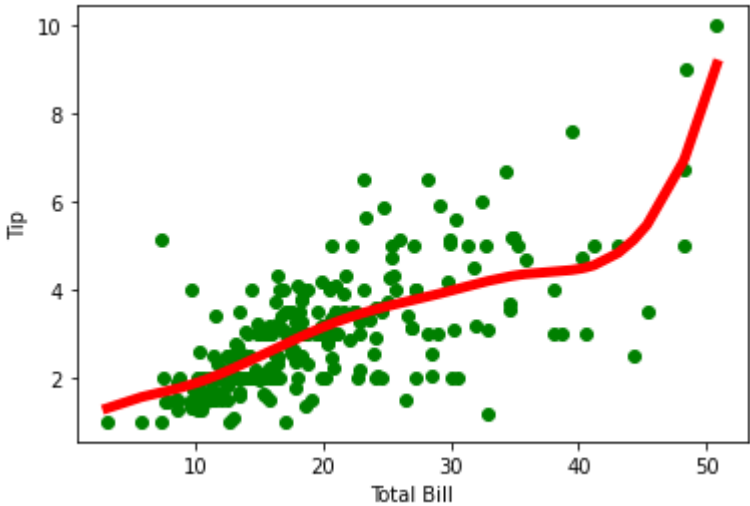


```

1 import matplotlib.pyplot as plt
2 import pandas as pd
3 import numpy as np
4
5
6
7
8
9 def kernel(point,xmat,k):
10     m,n=np.shape(xmat)
11     weights=np.mat(np.eye((m)))
12     for j in range(m):
13         diff=point-X[j]
14         weights[j,j]=np.exp(diff*diff.T/(-2.0*k*2))
15     return weights
16
17 def localweighth(point,xmat,yamat,k):
18     wei=kernel(point,xmat,k)
19     W=(X.T*(wei*X)).I*(X.T*(wei*yamat.T))
20     return W
21
22 def localweightregression(xmat,yamat,k):
23     m,n=np.shape(xmat)
24     ypred=np.zeros(m)
25     for i in range(m):
26         ypred[i]=xmat[i]*localweighth(xmat[i],xmat,yamat,k)
27     return ypred
28
29 def graphplot(X,ypred):
30     sortindex=X[:,1].argsort(0)
31     xsort=X[sortindex][:,0]
32     fig=plt.figure()
33     ax=fig.add_subplot(1,1,1)
34     ax.scatter(bill,tip,color='green')
35     ax.plot(xsort[:,1],ypred[sortindex],color='red',linewidth=5)
36     plt.xlabel('Total Bill')
37     plt.ylabel('Tip')
38     plt.show()
39
40 data=pd.read_csv('/content/10data_tips.csv')
41 bill=np.array(data.total_bill)
42 mbill=np.mat(bill)
43 tip=np.array(data.tip)
44 mtip=np.mat(tip)
45 m=np.shape(mbill)[1]
46 one=np.mat(np.ones(m))
47 X=np.hstack((one.T,mbill.T))
48 ypred=localweightregression(X,mtip,8)
49 graphplot(X,ypred)

```





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