COURSE NAME

Question 4

Here for this question there are 4 files namely svm1, svm2, svm3, svm4 for each part of the question. Also the data set is provided for ease of evaluation.

Guidelines for running the code:

Python svm1.py : runs for the entire dataset on linear kernel

Python svm2.py num : here num shows the number of rows to be included

Python svm3.py : TThis will print all the subquestion output at once

Python svm4.py : This will print all the subquestion output at once

Python version is 2

4.a) support vector: [14 14]

Accuracy : 0.978773584906

4.b) **Taking 50 points :**

support vector: [1 1]

Accuracy : 0.98

Taking 100 points :

support vector: [2 2]

Accuracy : 0.99

Taking 200 points :

support vector: [4 4]

Accuracy : 0.99

Taking 800 points :

support vector: [7 7]

Accuracy : 0.981132075472

4.c) i) **False:**

Accuracy_train_5 : 0.995515695067

Accuracy_train_2 : 0.991031390135

ii) **True:**

Number for Q5 = [13 12] Number for Q2 = [38 38]

iii) **False:**

Accuracy_train_5 : 0.995515695067

Accuracy_train_2 : 0.995515695067

iv) **False:**

Accuracy_test_2 : 0.981132075472

Accuracy_test_5 : 0.978773584906

4.d) **C = 0.01**

support vector2: [174 173]

Accuracy_test : 0.978773584906

Accuracy_train : 0.996156310058

C = 1

support vector: [17 13]

Accuracy_test : 0.978773584906

Accuracy_train : 0.995515695067

C = 100

support vector: [11 9]

Accuracy_test : 0.981132075472

Accuracy_train : 0.996796925048

C = 10^4

support vector: [10 7]

Accuracy_test : 0.981132075472

Accuracy_train : 0.997437540038

C = 10^6

support vector: [11 7]

Accuracy_test : 0.978773584906

Accuracy_train : 0.998718770019

=> **Here we can see that lowest training error is when C = 10^6 and lowest test error when C = 100 or 10^4**