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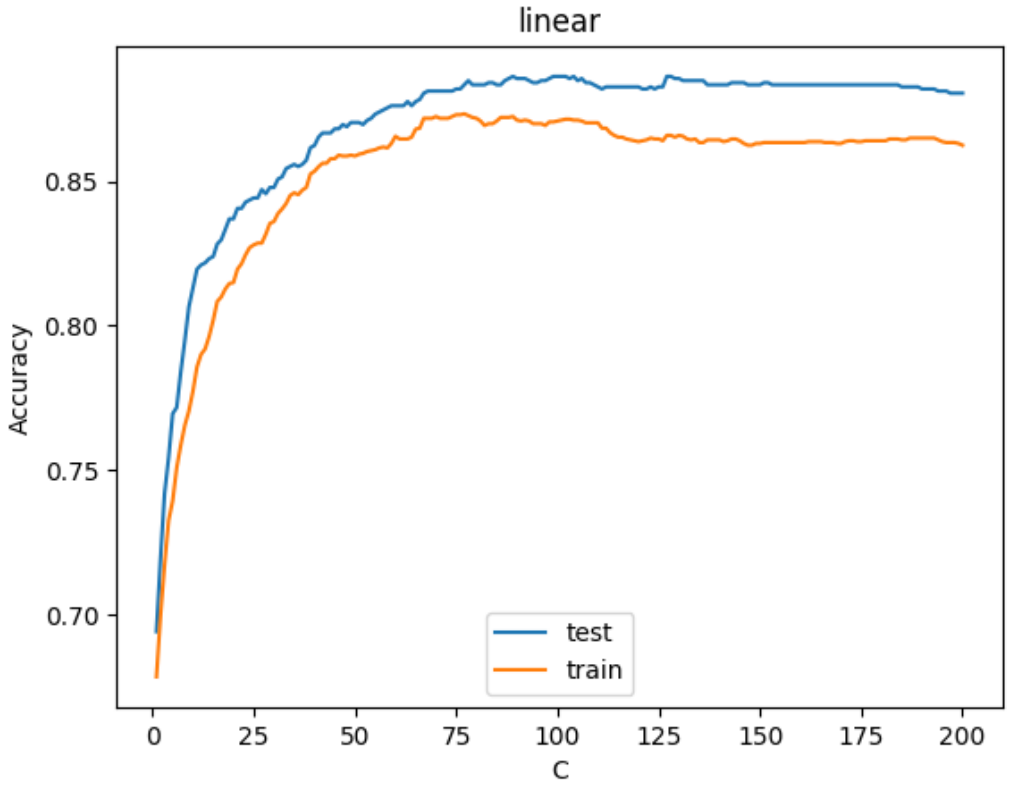
Assignment 5
SVM

In this assignment, I have used Sklearn library of python to train the SVM. Following are the steps I have used for the same:-

- First the complete dataset is loaded from the CSV file and is stored in a numpy array.
- Then the dataset is randomly splitted in ratio of 70:30 for training and testing dataset.
- Then the dataset is normalised to bring all the labels of the dataset in range of 0 to 1, using the using sklearn library.
- Finally the Sklearn Library is used to train the SVM model.

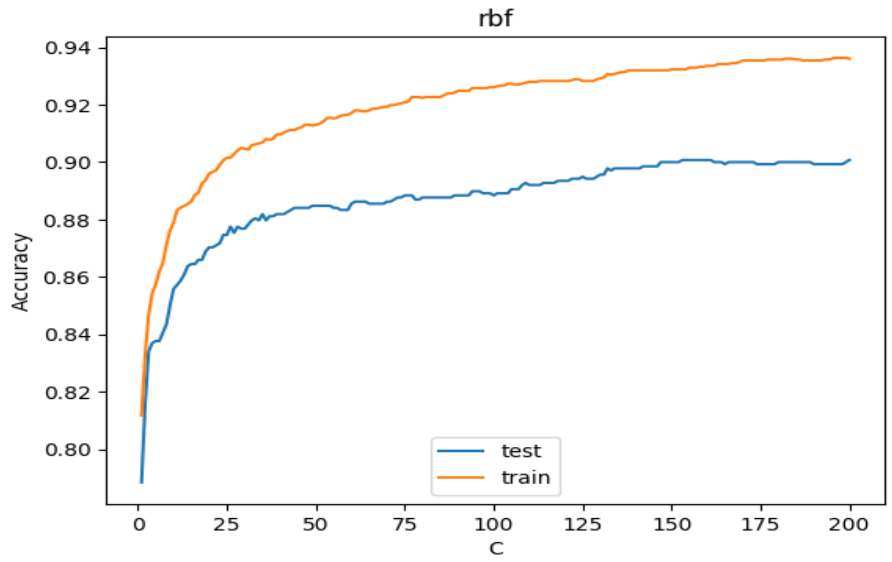
The following section shows the result.

Results:- All the model are trained for **gamma=7**. For the case of linear kernel the following is the graph of Accuracy vs value of C.



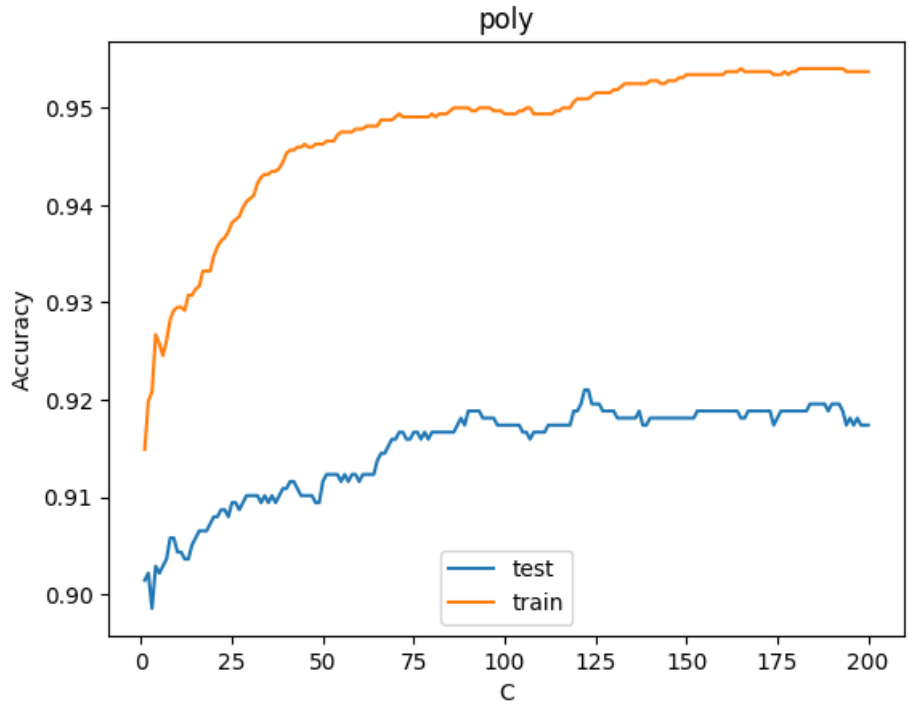
The best test accuracy for the linear kernel is **88.62%** at **C=89** and training accuracy = 87.32% at C = 73.

For the case of RBF kernel, following is the graph.



The best accuracy for the RBF kernel is **90.07%** at **C = 122** and train accuracy = 93.63% at C= 165.

For the case of Quadratic kernel, following is the graph.



The best accuracy achieved for the above case is **92.10%** at **C=122** and train accuracy = 95.4% at C=165 .

From the results it is clearly visible that for the Quadratic Kernel, the SVM is overfitting the training dataset resulting in high training accuracy but not less test accuracy.