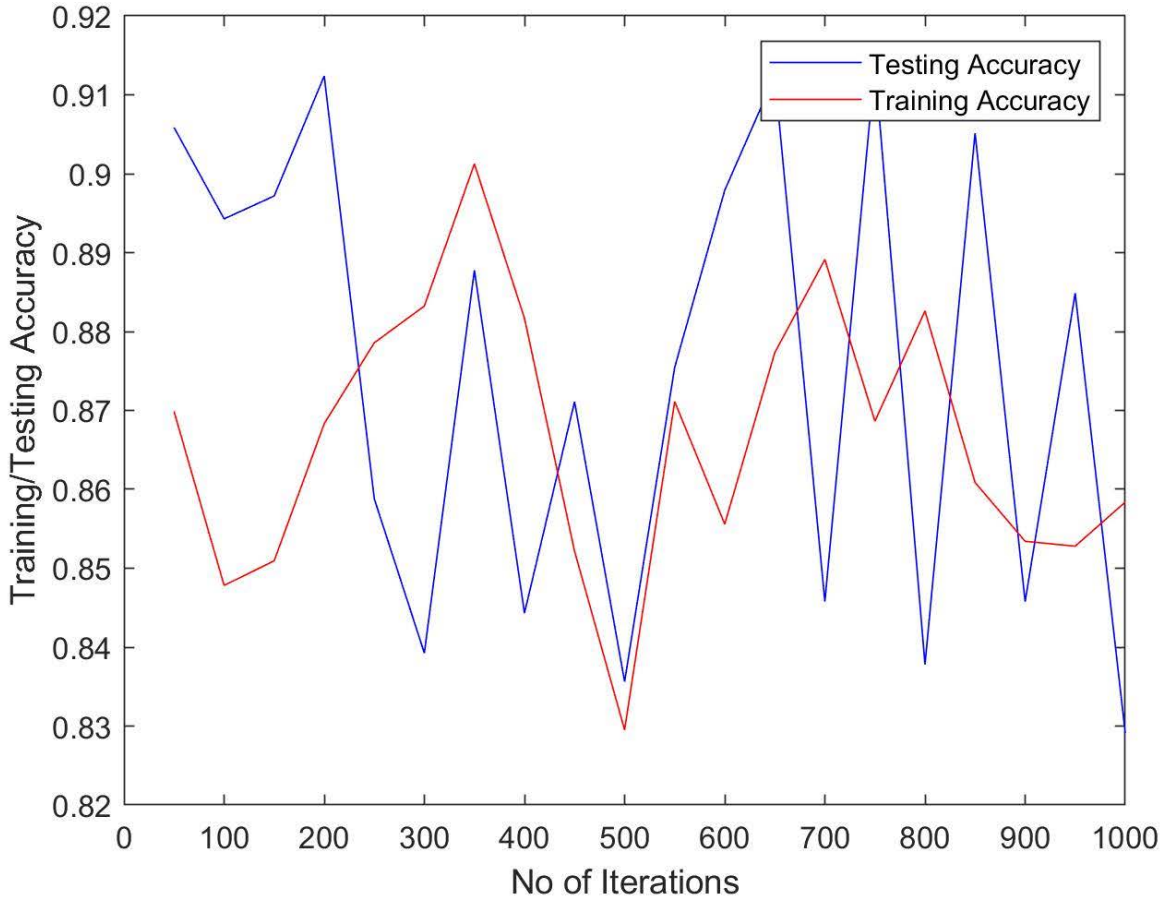
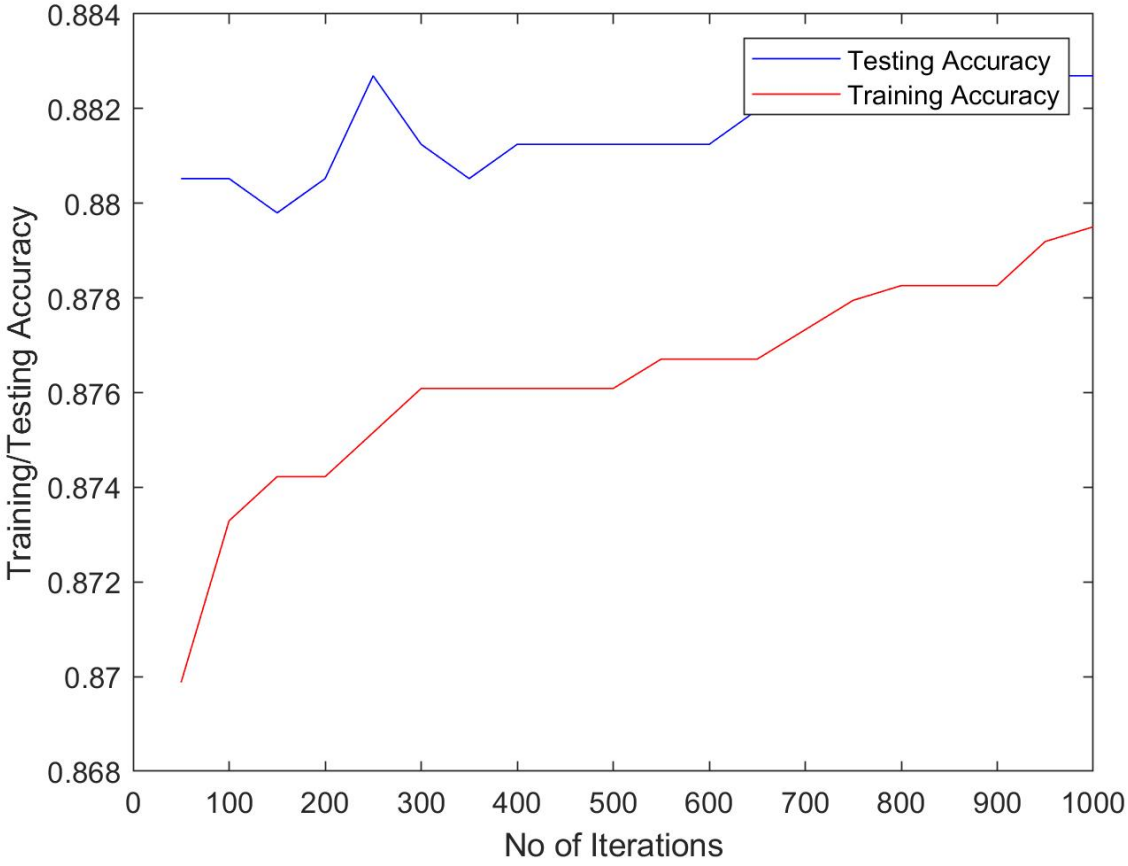
Assignment 3

Non-regularized

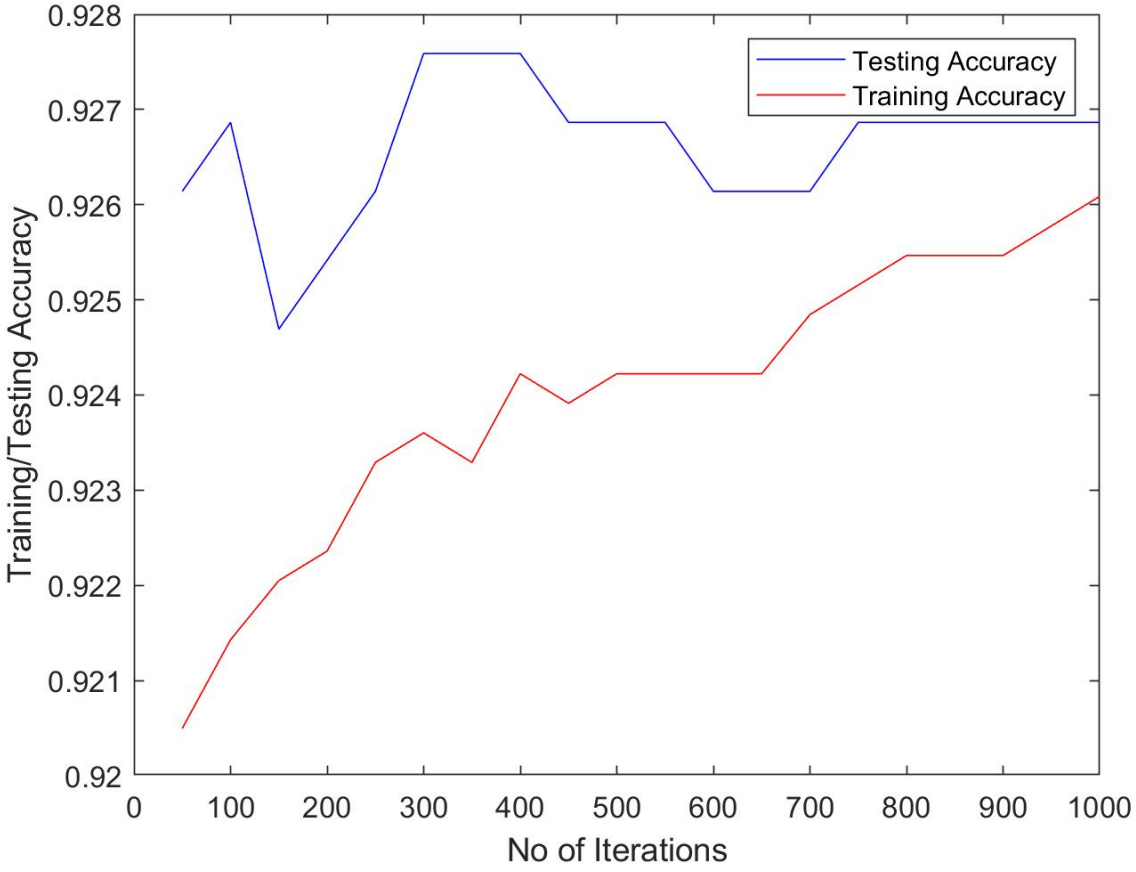
Graphs for different learning rates



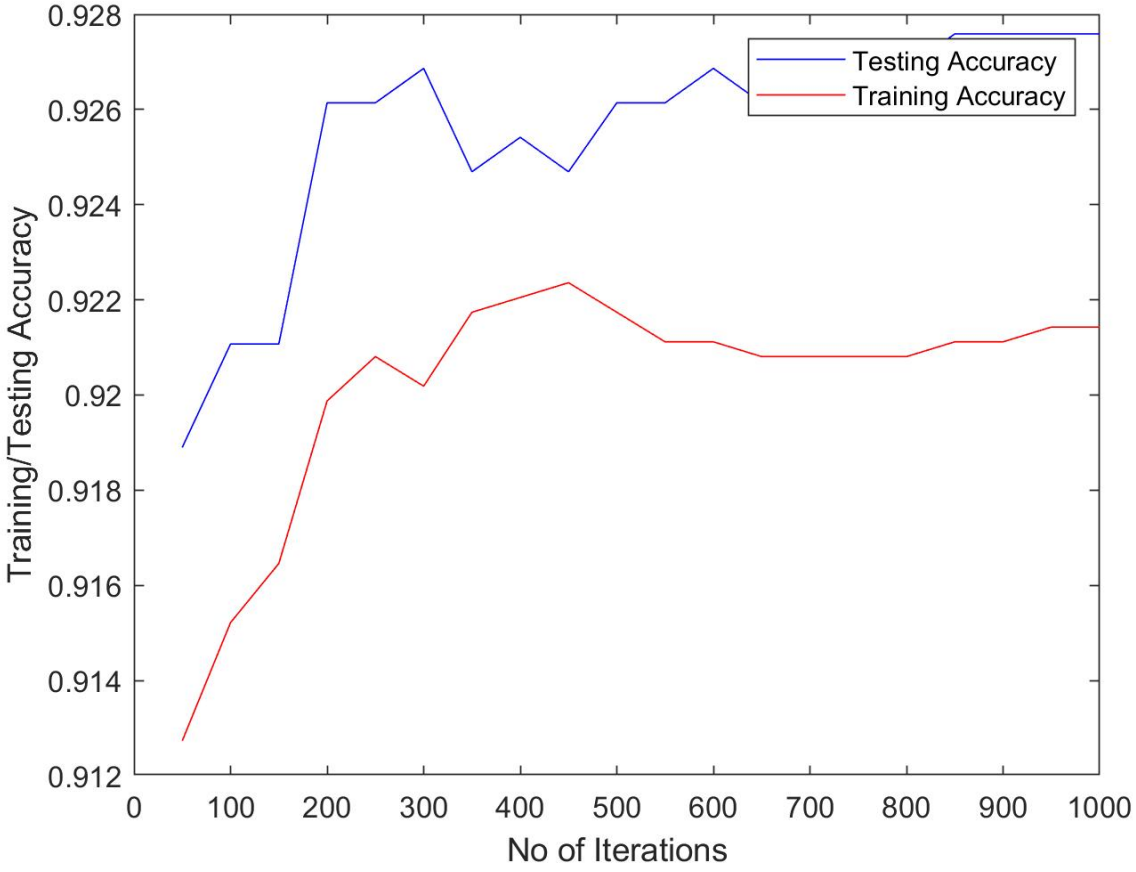
Training and Testing accuracies for leaning rate = 1



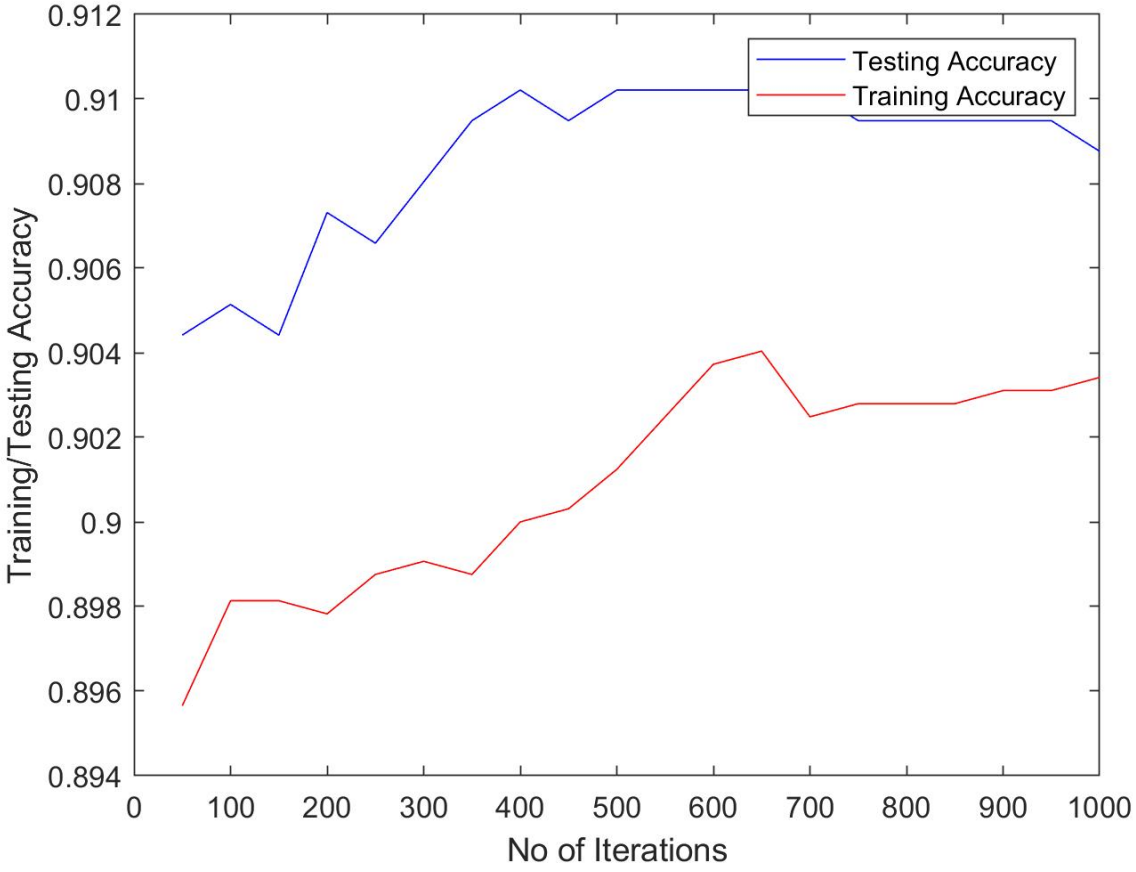
Training and Testing accuracies for leaning rate = 0.01



Training and Testing accuracies for leaning rate = 0.001



Training and Testing accuracies for leaning rate = 0.0001



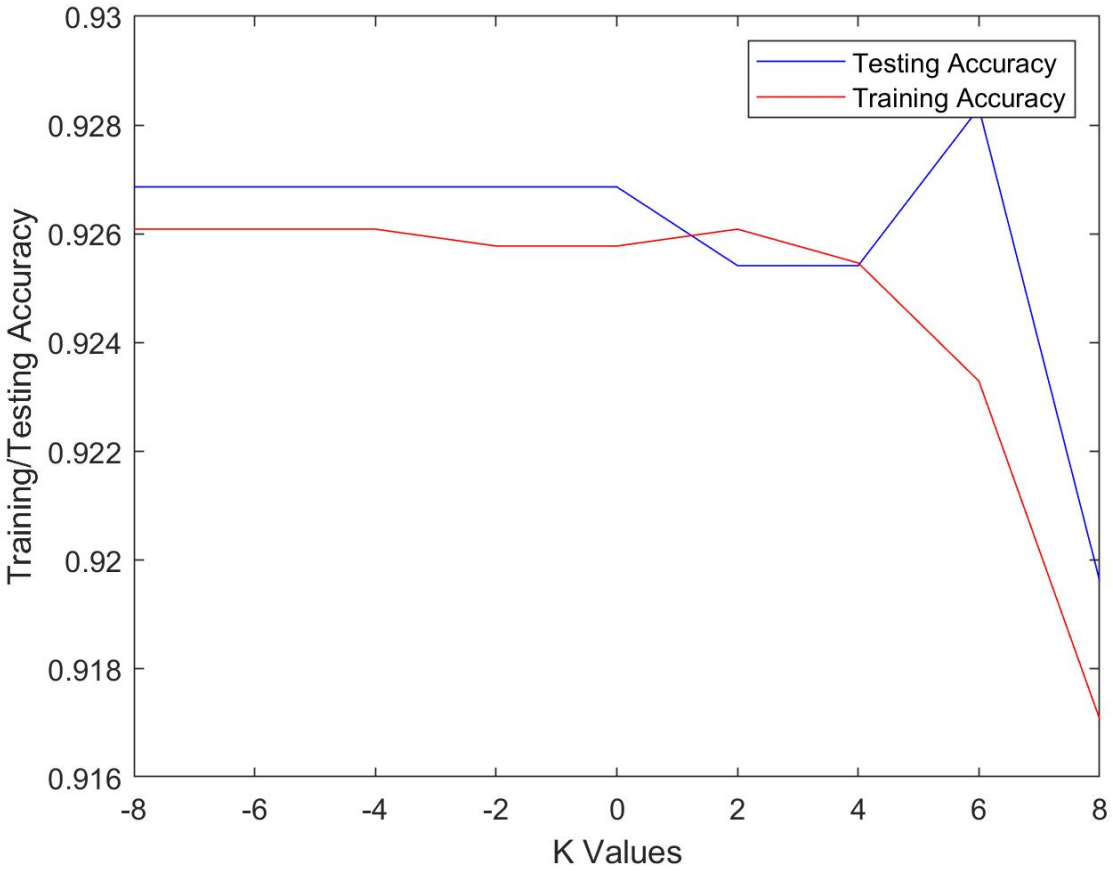
Training and Testing accuracies for leaning rate = 0.000001

Effect of different leaning rates

The accuracy of both training and testing increase and then decreases with the decrease in the learning rate.

The ideal accuracies obtained for the datasets were using learning rate as 0.001 and 0.0001.

Using regularization



Training and Testing accuracies of leaning rate = 0.0001 for different values of K.

Effect of Lambda

Compared to the accuracy got without using regularization the training accuracy using regularization remains same till K =6 and starts decaying.

The testing accuracy remains same till K = -2 and the decays a little till k=4 then there is a sudden steep in the testing accuracy when K = 6 (Higher than non-regularized accuracy when learning rate is 0.0001) and then it decays.