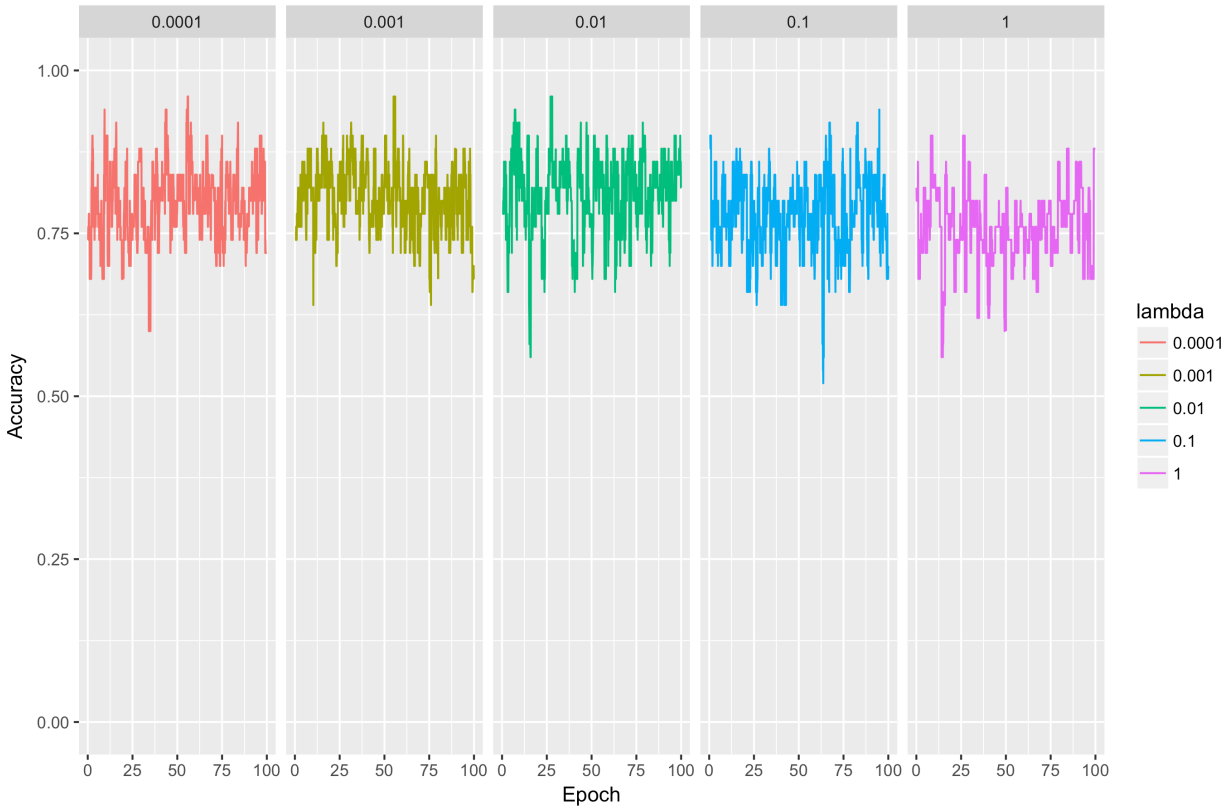
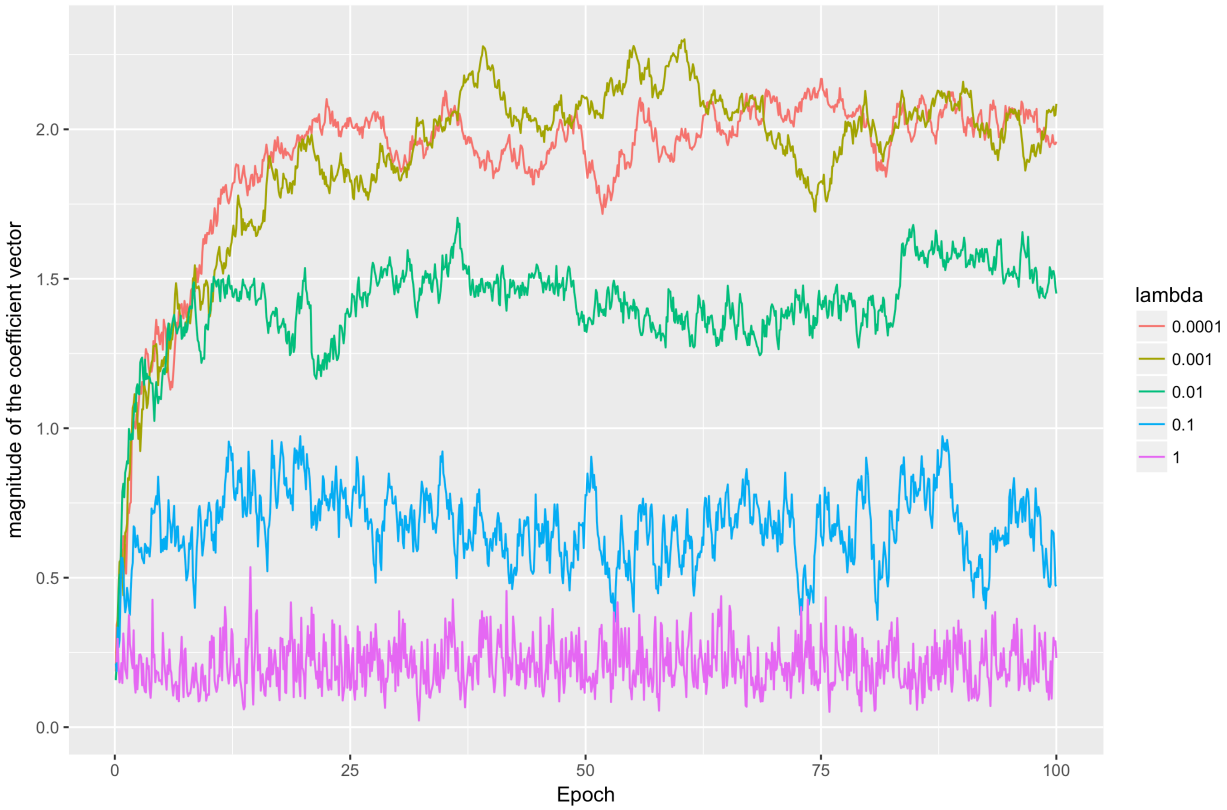
Homework 2 report

1. A plot of the accuracy every 30 steps, for each value of the regularization constant.
   Plot showing accuracy record every 30 steps, 300steps/epoch, total of 1000 records (100 epoch). Because the lines are overlapping with each other, I used facet to show them clearly)



2. A plot of the magnitude of the coefficient vector every 30 steps, for each value of the regularization constant.



3. The estimation of best value of the regularization constant is lambda=0.001.
   The estimation is based on two aspects:
   1). Although different lambda yields very similar accuracy, it looks like smaller regularization constant does bring slightly higher accuracy.

lambda	accuracy
1	0.7698608
0.1	0.7825553
0.01	0.793407
0.001	0.8044636
0.0001	0.8009828

   2). The two plots above shows that when lambda=0.001, both iterations of accuracy and magnitude of the coefficient vector are more stable than when lambda is smaller.

4. Your estimate of the accuracy of the best classifier on the 10% test dataset data. The accuracy is 0.795087.

Resource

1. slack discussions
2. https://stackoverflow.com/questions/36068963/r-how-to-split-a-data-frame-into-training-validation-and-test-sets

Referred this post for random splitting data into train/validation/test

3. ggplot documentation for the final plot