1. Complete the file dsgd_mf_template.cpp.

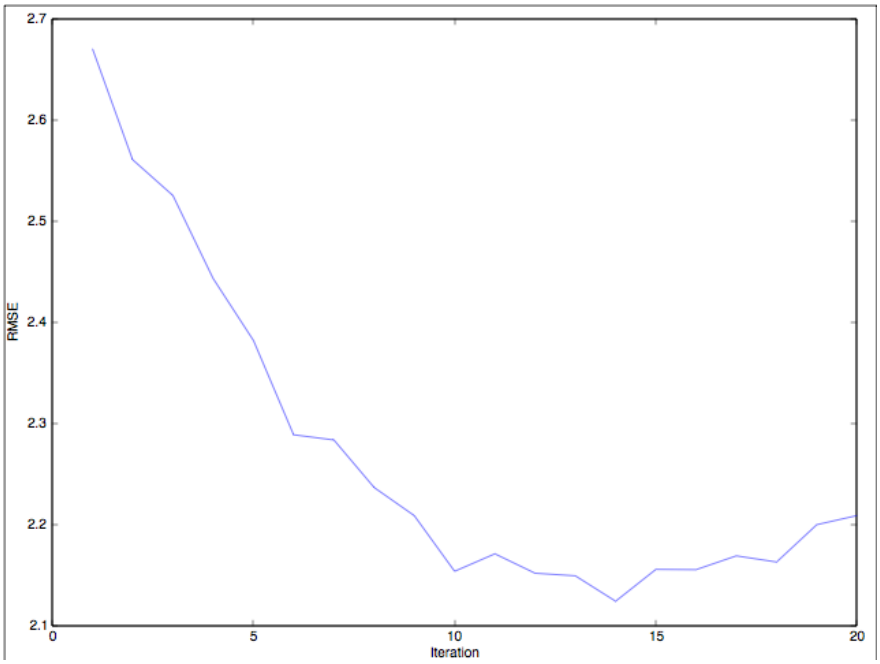
   See my code.

2. Set the rank to 10 and the step size to 0.00001. Run the code for MovieLens 1 Million Dataset.

   mpirun -n 4 --hostfile host ./dsgd_mf 3883 6040 10 20 0.00001 1

3. Compute the RMSE by using the code compute_rmse.cpp and plot the RMSE in Matlab by using plot_rmse.m.

   Where k=10 eta=0.00001

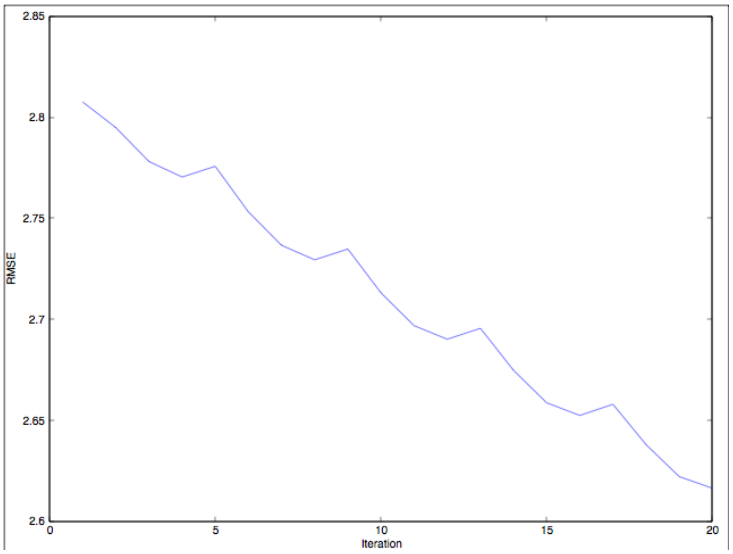


4. Play with the rank and the step-size. What do you observe?

   Eta=0.000001
   with k=10

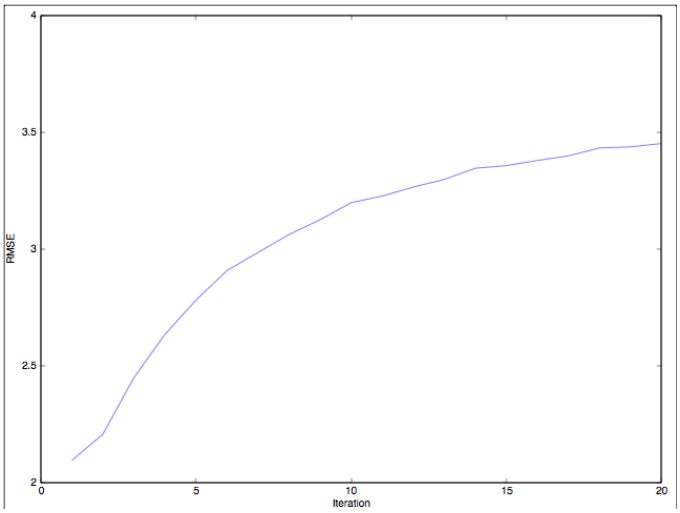
   At the end of the iteration, the loss function still doesn't at reach the minimal loss.

   That is by low learning rate.

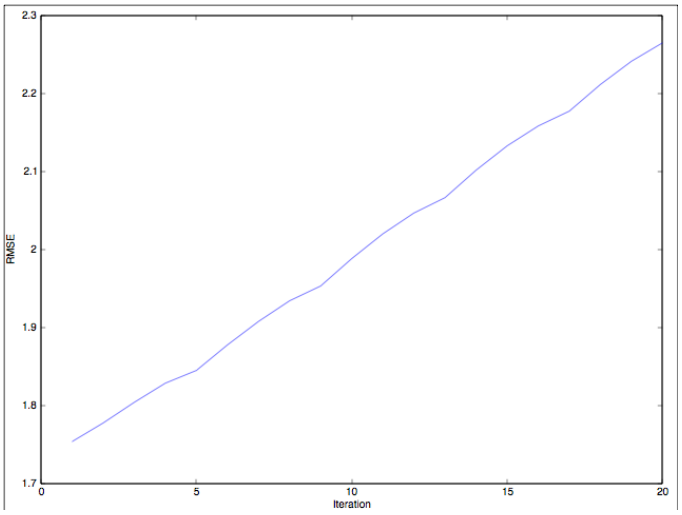


eta=0.0001

As we could see at the beginning, the loss value is the lowest. After some iterations, the loss value growth. Because the learning rate is a large number.



k=5, it is quite weird, the loss value almost like linear. I don't know why.



k=20, the loss value is the highest, even when at the end of the iteration, the loss value is still high.