Write a Python program for optimizing the SVM hinge loss using  
gradient descent algorithm. The input and output should be the same as for  
assignment 2.

Test your program with the data file [testSVM.data](https://njit.instructure.com/courses/4463/files/182118/download?wrap=1) and training label file [testSVM.trainlabels](https://njit.instructure.com/courses/4463/files/182122/download?wrap=1)

Convert label 0 to -1 so that labels r\_i's are either +1 or -1. This is  
necessary for the gradient descent to work.

Use eta=.001 and stopping condition of while(abs(prevError - error) > .000000001).  
Note the absolute value to account for instability in the gradient for hinge  
loss. The converged solution with the hinge loss for the test data given above would be approximately

w = (1.460557, -0.459554)  
w0 = -2.002468  
Dist to origin= 1.307820