Assignment 2 - James Quacinella

Part 1

Find attached a file named “LearningPerception.R”, which implements the perceptron. Find also attached "perceptron.predictions.csv”, which holds the predictions for the private data set.

The solution weight vector found is c(2597.10000, -878.00639, 94.24669, -1566.20134) when starting the weight vector as the 0 vector. This leads to 0% of the examples from being misclassified in either the training or public data sets. Changing the initial weight vector, however, to something other than the 0 vector leads to very different solutions (e.g. w <- 1000.000000 -201.878525 -4.347122 -301.392749). This leads to only small changes in the prediction values, but interesting nonetheless.

Part 2

a. Do you think this is a reasonable assumption for this coin project? -- No, since some of the variables are clearly related in some way. For example, a thicker or wider coin should generally have more mass.
b. Find attached DesignLikelihood.R
c. Interestingly enough, this method seems to work well with 0% error rate on the public data set. Same for the coin-training-data.csv file as well.
d. Find attached likelihood.predictions.csv. Note, there are differences in the final predictions when compared to the perceptron. I think the assumptions underlying this method would make it less successful, but more data would be needed (since the private data set has no predictions to check against).