# CISC452 Assignment#2 Implement a Backpropagation Network

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Please note the predictions generated will be placed in the predictions.csv file in the active directory.

Please run the provided python code, you can modify parameters of the network at the bottom of the file, they are all labelled.

2.

1. The initial weights are randomly generated for each run of the network. This allowed me to quickly run through multiple combinations of weights to find the best operating weights. The weights are also modified throughout the runtime of the network before the final weights are determined. A sigmoid output function was used. The same as the one provided in the lecture slides. The learning rate used was 0.3 values lower than 1 provided the best operation.
2. The network uses 10 input nodes because there are 10 columns. The network uses 5 hidden layers due to speed up execution time. There are 6 output nodes due to there being 7(0-6) possible types of glass.
3. Gradient descent was used as the regularization approach.
4. The data was imported from the csv file. The column labels were then removed. The values in the columns were then converted to numbers then they were normalized. Once this was completed the data was ready for the network.
5. The data was split 60/40 then the network was run 2 times on the data, the average of the 2 results was used as the final output for the network.

3. The results for this section are outputted in the python terminal.