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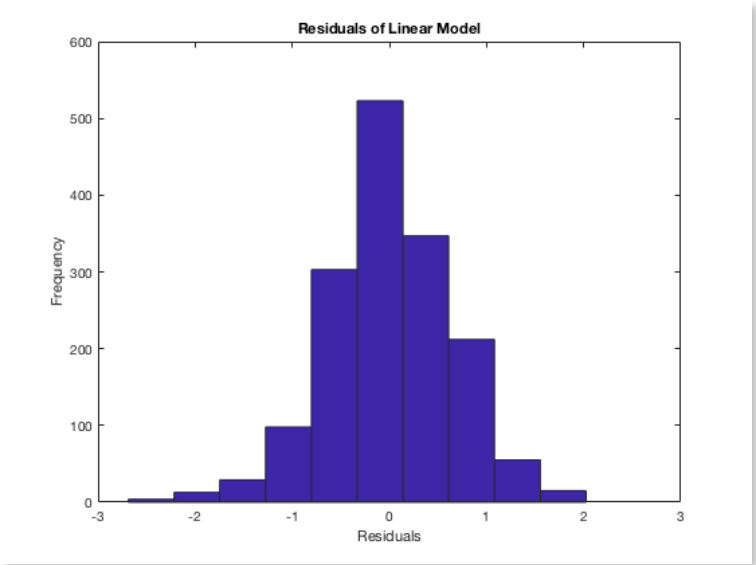
Homework 5

1. See code
2. 

3. The R^2 value is the first value in the stats variable. The value received from the regress function in MATLAB for the value for R^2 is about 0.36. Based on the information provided in class, a good value for R^2 is close to 1, so our model shouldn't be entirely accurate.

4. The three most important factors in determining the quality of the wine are those that are the most consistent among all wines. These are the lowest values of B_i which are the Residual Sugar, the Citric Acid, and the Density.

labels	avgs	B_i
'fixed acidity'	8.31963727329584	0.0897294501278918
'volatile acidity'	0.527820512820513	0.400128331580994
'citric acid'	0.270975609756096	0.0733403294802401
'residual sugar'	2.53880550343965	0.0474846514867365
'chlorides'	0.0874665415884926	0.181911000101969
'free sulfur dioxide'	15.8749218261413	0.0940792461111598
'total sulfur dioxide'	46.4677923702314	0.221461276701643
'density'	0.996746679174483	0.0695954558656268
'pH'	3.31111319574734	0.131698825172079
'sulphates'	0.658148843026892	0.320315482245059
'alcohol'	10.4229831144465	0.606985280534136

5. Based on our model, all the values of the given wine are more-or-less significantly off. This means that the wine is bad quality. It is important to note that with such a low value of R^2, our model is not a very good model; therefore, our conclusion may not be entirely accurate.
6. N/A
7. By subtracting the values of the given wine from the averages obtained above, we found the necessary changes to each value that would satisfy the model for a good wine. Values shown are values that would need to be added to the wine to improve quality.

labels	changes
'fixed acidity'	3.21963727329584
'volatile acidity'	0.227820512820513
'citric acid'	-0.529024390243904
'residual sugar'	-8.46119449656035
'chlorides'	-0.112533458411507
'free sulfur dioxide'	-52.6250781738587
'total sulfur dioxide'	30.7677923702314
'density'	-0.003253320825516 88
'pH'	0.111113195747343
'sulphates'	-0.941851156973108
'alcohol'	-3.1770168855535