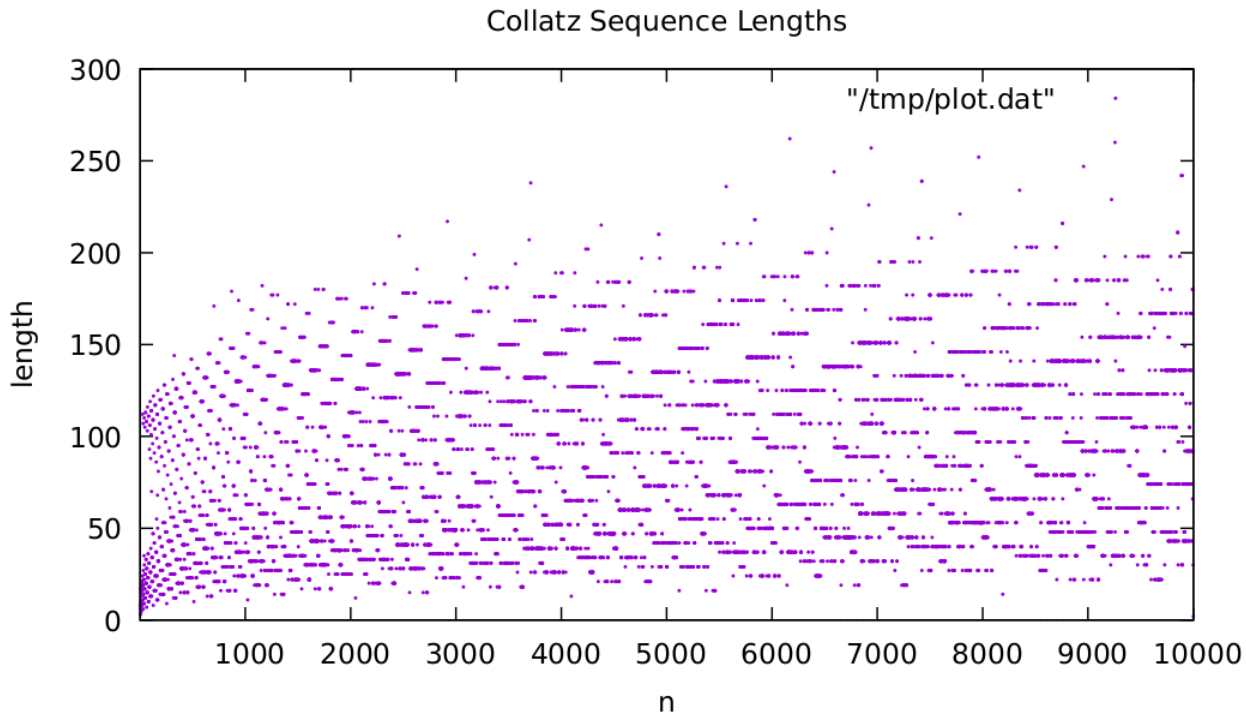
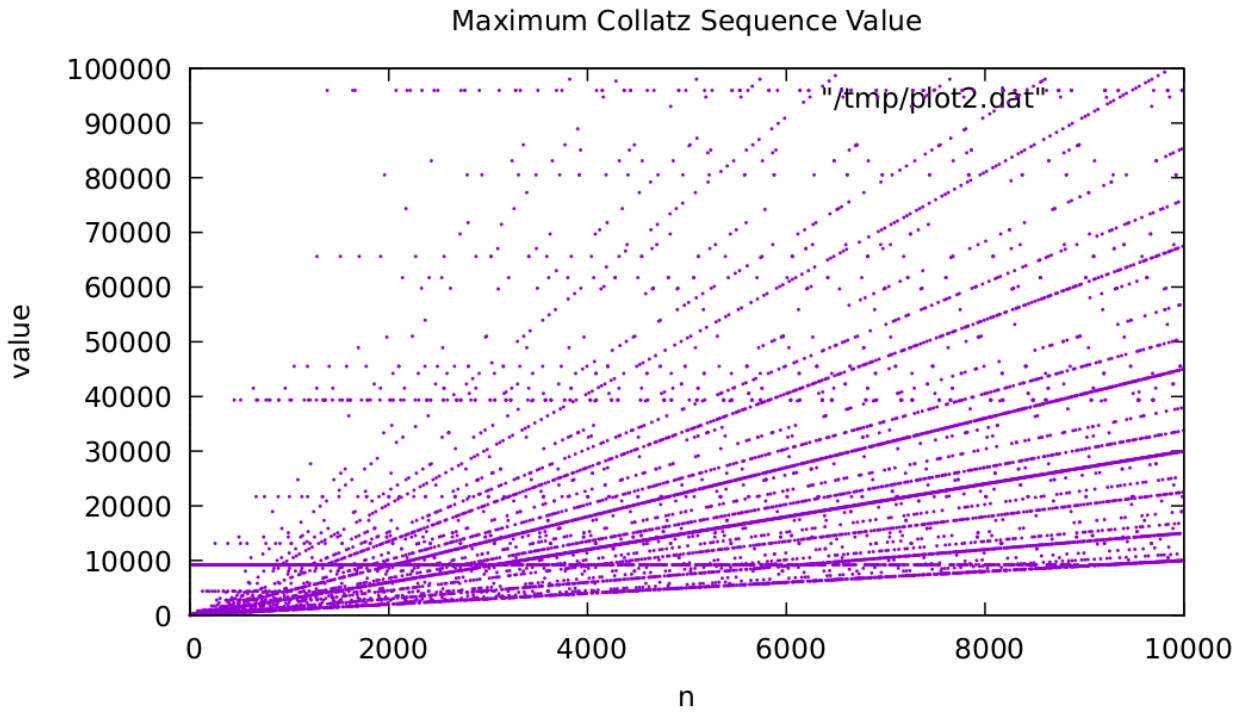
Plots produced from bash script. It should be noted that I used the examples from the instructions in the assignment to figure out what to place down, such as using | (it was easier and clearer to pipe two or more commands together like this for me) and the general structure of the code.

Plot 1:



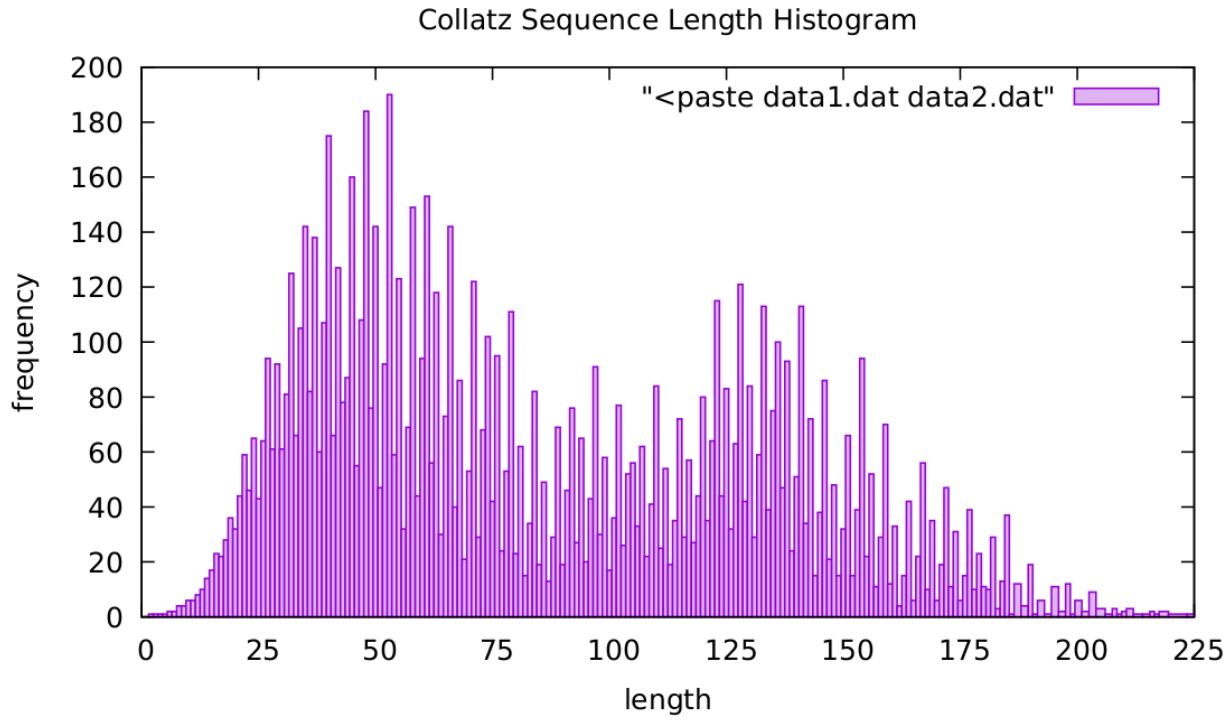
For the first plot, I used a for-loop because I used the example sincos plot in the assignment pdf to figure out what to do first. However, I understand that I need it to iterate through the numbers from the collatz file. I made the range from 2 to 10,000 because that's what the figures in the assignment showed. I used `wc -l` to count how many lines there were in order to graph this plot. I used this command as it was the simplest way I thought of to count the amount of lines there were to get the length. Then I appended it so that it can plot the points in a file. Using `gnuplot`, I was able to graph this.

Plot 2:



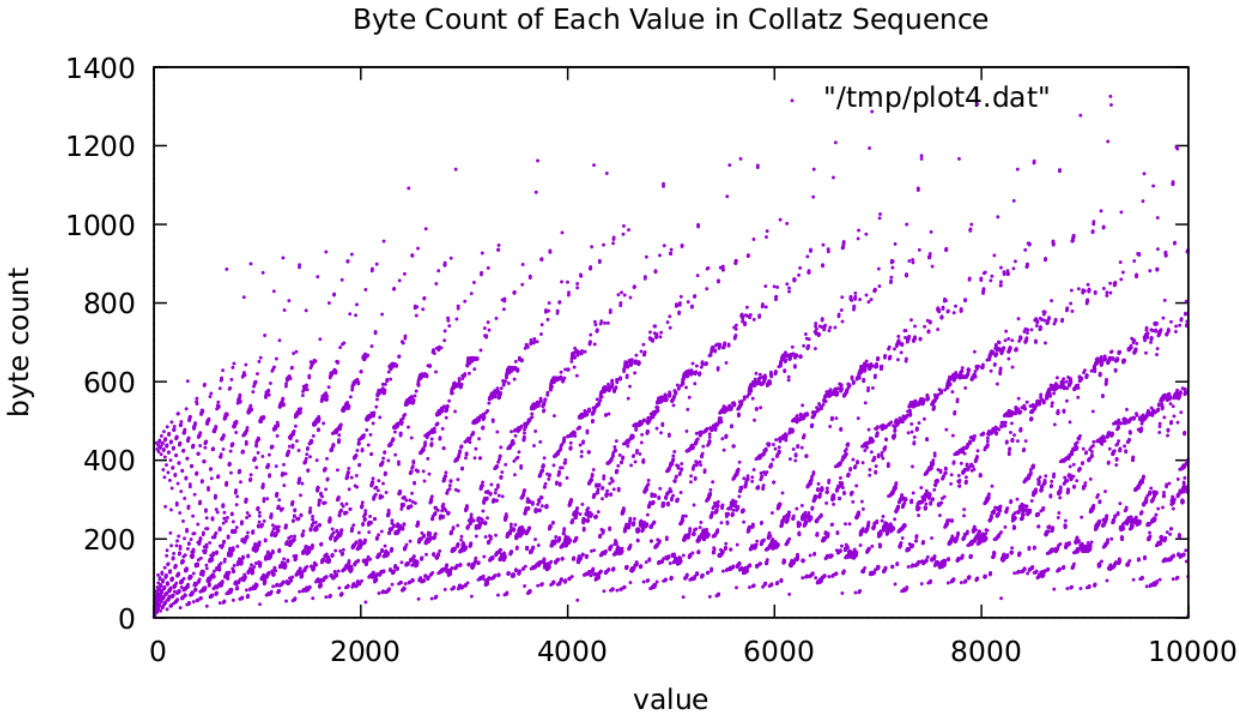
For the second plot, I once again used a for-loop because I used the example sincos plot in the assignment pdf to figure out what to do first. I made the range from 2 to 10,000 because that's what the figures in the assignment showed. I used `sort -n | tail -n 1` to sort the numbers in numerical value, then to output the last files in reverse starting from the first line. I used this command as it was the simplest way I thought of to get the numerical values in order and in reverse. Then I appended it so that it can plot the points in a file. Using `gnuplot`, I was able to graph this.

Plot 3:



For the third plot, I once again used a for-loop because I used the example sincos plot in the assignment pdf to figure out what to do first. I first found the amount of lines there were using `wc -l`. I put that into a temporary data file. I sorted the file numerically and found the amount of unique values with `sort -n` and `uniq -c.` I put these values into another data file and separated them using `awk` so that I could put the first column of values into one file and the second column in another file. I did this because I realized the x and y values needed to be switched. I also needed to `echo` stuff into one of the temporary files because, from what I understand, they needed to be overwritten since they would contain the previous data that wasn't correct. Then I made sure it would form the plots as histograms. Using `gnuplot`, I was able to graph this. I used this as a source of understanding for `awk` (http://lowrank.net/gnuplot/datafile3-e.html).

Plot 4:



For the fourth plot, I once again used a for-loop because I used the example sincos plot in the assignment pdf to figure out what to do first. I made the range from 2 to 10,000 because that's what the figures in the assignment showed. I used `wc -c` to get the byte counts of each value from the collatz file. I used this command because I was curious as to what would be produced from this plot, then deemed it interesting enough to upload for this assignment. Using `gnuplot`, I was able to graph this.