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Design Doc:

Purpose: We are developing a program to generate graph output using gnuplot with bash, to graph 3 plots given to us figure 2, figure 3, and figure 4 from given values using different labels as well as creating our own plot using the Collatz sequence.

Puesdocode

#!/bin/bash : creating my files to execute (bash script)
Creating a for loop that will run from 2-10000 times
Placing the data points (collatz.c) into a file called num.dat
Placing all the y values in a temp doc, from num.dat
Placing all the x values in a temp doc, from i

Pasting both the temp documents for x and y into one, graph1.dat
Removing both x and y temp doc

Graph 1 (Figure 2)

Putting it into gnuplot.
Saving the graph into pdf version calling it
Setting the title to the pdf len.pdf
Sset the title of the graph, Collatz Sequence Lengths
Setting x and y label. X is called n, and Y is called length.
Setting the graph's Y range 0-300
Seeting the graphs Y scale 50
Setting the graph's X range 0-10000

Seeting the graphs X scale 1000
Next we have to plot the graph

Graph 2 (Figure 3)

Creating a for loop that will run from 2-10000 times
Placing the data points (collatz.c) into a file called num.dat
Sorting all the values in num.dat and setting it to sort_num.dat
Takes the max in sort-num.dat and puts it in the temp doc y_val.dat
Placing all the x values in a temp doc, from i

Pasting both the temp documents for x and y into one, graph2.dat
Removing both x and y temp doc
Removing sort_num.dat temp doc

Putting it into gnuplot.
Saving the graph into pdf version calling it
Setting the title to the pdf val.pdf
Sset the title of the graph, Maximum Collatz Sequence Value
Setting x and y label. X is called n, and Y is called value.
Setting the graph's Y range 0-100000
Seeting the graphs Y scale 2000
Setting the graph's X range 0-10000
Seeting the graphs X scale 1000
Next we have to plot the graph

Graph 3 (Figure 4)

Creating a for loop that will run from 2-10000 times
Placing the data points (collatz.c) into a file called num.dat
Takes the max in sort-num.dat and puts it in the temp doc x_val.dat

Pasting the temp documents for x into one, graph3.dat
Removing the x doc

Putting it into gnuplot.
Saving the graph into pdf version calling it
Setting the title to the pdf freq.pdf
Sset the title of the graph, Collatz Sequence Length Histogram
Setting x and y label. X is called length, and Y is called frequency.
Setting the graph's Y range 0-200
Setting the graph's X range 0-225
Next we have to plot the graph

Graph 4 (Additional Plot)

Creating a for loop that will run from 2-10000 times
Placing the data points (collatz.c) into a file called num.dat
Placing all the y values in a temp doc, from num.dat
Placing all the x values in a temp doc, from i

Pasting both the temp documents for x and y into one, graph1.dat
Removing both x and y temp doc

Putting it into gnuplot.
Saving the graph into pdf version calling it
Setting the title to the pdf len.pdf
Sset the title of the graph, Collatz Sequence Lengths
Setting x and y label. X is called n, and Y is called length.

Setting the graph’s Y range 0-100

Seeting the graphs Y scale 10

Setting the graph’s X range 0-1000

Seeting the graphs X scale 100

Next we have to plot the graph