

Assignment 1 Design Document

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1 Collatz Sequence Lengths

for n from 2 to 10000:

```
    input n into collatz.c
    add n to next line of dat file
    add space then line count of output to dat file
```

graph dat file as points with n label on x axis and length label on y axis

2 Maximum Collatz Sequence Value

for n from 2 to 10000:

```
    input n into collatz.c
    add n to next line of dat file
    find maximum value out of the outputs
    add space then max value to dat file
```

graph dat file as points with n label on x axis and value label on y axis

3 Collatz Sequence Length Histogram

for n from 2 to 10000:

input n into collatz.c
take length of output

get frequency of lengths from output
graph dat file as boxes with length label on x axis and frequency label on y axis

4 Collatz Sequence Max Value Divided by Starting Value

for n from 2 to 10000:

input n into collatz.c
add n to next line of dat file
find maximum value out of the outputs
add space then max value divided by n to dat file

graph dat file as points with n label on x axis and value label on y axis