

Winter 2017
Due Mar 3rd

Computer Science 1510 Assignment #5

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- This assignment requires electronic submission of your source code files. Follow the directions under “Submission Details for All Assignments” on the “Links” tab on the course webpage to submit your assignment.
 - It is not necessary to submit hard (printed) copies of your assignment.
 - Be sure to include sufficient comments in your code, and labels in your output.
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1. A histogram is a graphical representation of a frequency distribution for a data set. For example, consider the midterm grades for a class of 50 students. A histogram could look like the following:

Histogram:

A: *****

B: *****

C: *****

D: *****

F: *****

Write a Fortran program that reads grades from a user-specified file and prints a histogram similar to the one shown above (use the MUN grading scheme). The file should have the following format:

```
50 - number of grades in the file
70
63
89
.
.
.
73
40
```

Where, in this case, there are a total of 51 lines, with the first line indicating the number of students (ie. marks in the file). Use an array to store the number of marks in each “bin” (or range). For example, the first element of the array could store the number of As. Use a `SUBROUTINE` to write out the histogram.

2. In Lab 3, you wrote a function CSL which computed the Collatz Sequence Length starting at a given number n .

For this question, you will write a RECURSIVE function called CollatzSequence which takes as input an integer N and recursively computes and prints the Collatz Sequence starting at N until it reaches 1. (You do not have to print its length)

Your function should not use loops or iteration of any kind, instead relying solely on recursive function calls to compute the next number in the Collatz Sequence.