Program #4: Collatz’ conjecture

Due date: End of lab on Friday, March 18, 2016

Collatz’ conjecture is that if the following operation is applied repeatedly to a positive integer (N) it will eventually reach 1

If N is even, N=N/2 otherwise N=N*3+1

For example, if we start with 7, we reach 1 in 16 steps

7  22  11  34  17  52  26  13  40  20  10  5  16  8  4  2  1

Write a Pep program that inputs 2 positive integers A and B (A<B) and, for each integer(l) in the range A..B, outputs

the integer l
the length of the sequence (L) when we start with l
L asterisks or, if there is overflow when computing the sequence, a message in place of the asterisks.

Extra credit

Some sequences are long (>100). Scale your output so that no string of asterisks is longer than 32.

By the due date turn in your source code and the results of testing your program.

Grading

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Example runs (regular)

Enter A and B: 10000 10002
10000 29 ****************************
10001 Overflow
10002 65 ****************************

Enter A and B: 70 80
70 14 *******************
71 102 ****************************
72 22 *******************
73 115 ****************************
74 22 *******************
75 14 *******************
76 22 *******************
77 22 *******************
78 35 *************************
79 35 *************************
80 9 *******************

Example runs (Extra credit version)

Enter A and B: 10000 10002
10000 29 *******************
10001 Overflow
10002 65 ****************************

Enter A and B: 70 80
70 14 ***
71 102 *******************
72 22 *****
73 115 *******************
74 22 *****
75 14 ***
76 22 *****
77 22 *****
78 35 ********
79 35 ********
80 9 **