**Homework 11**

**Due: Sunday (see Syllabus)**

**Points: 40**

**Instructions**

In this exercise you will write a Perl program to find the first **Collatz Sequence** whose length is greater than or equal to 200. The Collatz Sequence is a sequence of integers that starts at N and then repeatedly computes terms until the value 1 is reached. The length of the sequence is the number of values in the sequence, including N and 1.

The “computational rule” for creating the Collatz Sequence is to start from some given N, and to generate the next term of the sequence from N, either by halving N, (whenever N is even), or else by multiplying it by three and adding 1. The sequence terminates when N reaches 1. A short Python program (Collatz.py) has been provided so that you can see the computation in action.

**Specifications**

1. Your job is to write a Perl program to find the first Collatz Sequence whose length is greater than or equal to 200.
2. You may base your code on the Python script that has been provided.
3. You do NOT need to create a Perl function – just write a loop that checks Collatz Sequences until it finds one >= 200 in length.
4. Your output should pretty much match that shown in the Sample Output below.

Run your program several times using different inputs – sufficient to demonstrate that your program meets all the assignment requirements. For your submission, you should show your code finding the first Collatz Sequence ≥ 10, ≥ 24, ≥ 100, and ≥ 200. Capture a screen shot of each run and paste them into an MS Word document. Place a caption above each image.

**Submit the Perl .pl file (lastname\_hw11.pl) containing your program and the MS Word document** **to your instructor using the appropriate Assignment Submissions link.**

Attach: ***Collatz.py***

**Sample Output**

**Collatz Sequences >= 10, 24, and 100**

A picture containing text, window

Description automatically generated

**Collatz Sequence >= 200**

A picture containing graphical user interface

Description automatically generated