COP3330 program for extra points no.1

The number puzzle

Objective: To try a more challenging program.

Overview

The number puzzle is similar to the “24” puzzle where you are given 4 numbers and you would try to form an expression that calculates to 24 using the 4 numbers and the +, -, \*, / operators. In our number puzzle, you are given N numbers (N = 1, 2, …, 6) and a result, and the program should try to form an expression that calculates to the result using the N numbers and the +, -, \*, / operators.

The input to the program consists of lines of the following format:

N x1 x2 … xN  RES

For each line, if the program finds an expression, EXP, that calculates to RES, it should print out a line “Success: {EXP} == RES.” If there exist such expressions, the program must find at least one of them and print the “Success” line. If there is no such expression, the program should print out a line “Fail: x1 x2 … xN  can’t make RES.” A sample input file and the corresponding output are provided. In forming the expression, there are two restrictions. First, there should not have any negative number in the expression. For example, the resulting expression can contain a sub-expression, 5-3, but it should not have a sub-expression 3-5. Second, there should not have any fraction in the expression. For example, there should not have a sub-expression 5/3: if there is a sub-expression X/Y, X must be divisible by Y.

Submission

The latest time to get extra points for this program is June 12 (Wendesday), 2013. 11:59pm. Put everything in one file, name it yourlastname\_firstinitial\_extra1.cpp, and submit the file in blackboard.

Grading policy

The program will be awarded 30 extra points that can be added to any programming assignment. You will either get 30 points or 0 point for this submission. To get the 30 points, you program must satisfy all of the following:

* The program must produce correct answers to all cases including all in test\_extra1.txt (and more).
* The program must have no more than 120 lines of code with each line being a simple statement.
* The program must be able to complete all cases in test\_extra1.txt in 2 minutes on linprog (you can compile with –O3 flag).