

A. Problem About Equation

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

A group of n merry programmers celebrate Robert Floyd's birthday. Polycarpus has got an honourable task of pouring Ber-Cola to everybody. Pouring the same amount of Ber-Cola to everybody is really important. In other words, the drink's volume in each of the n mugs must be the same.

Polycarpus has already began the process and he partially emptied the Ber-Cola bottle. Now the first mug has a_1 milliliters of the drink, the second one has a_2 milliliters and so on. The bottle has b milliliters left and Polycarpus plans to pour them into the mugs so that the main equation was fulfilled.

Write a program that would determine what volume of the drink Polycarpus needs to add into each mug to ensure that the following two conditions were fulfilled simultaneously:

- there were b milliliters poured in total. That is, the bottle need to be emptied;
- after the process is over, the volumes of the drink in the mugs should be equal.

Input

The first line contains a pair of integers n, b ($2 \leq n \leq 100, 1 \leq b \leq 100$), where n is the total number of friends in the group and b is the current volume of drink in the bottle. The second line contains a sequence of integers a_1, a_2, \dots, a_n ($0 \leq a_i \leq 100$), where a_i is the current volume of drink in the i -th mug.

Output

Print a single number "-1" (without the quotes), if there is no solution. Otherwise, print n float numbers c_1, c_2, \dots, c_n , where c_i is the volume of the drink to add in the i -th mug. Print the numbers with no less than 6 digits after the decimal point, print each c_i on a single line. Polycarpus proved that if a solution exists then it is unique.

Russian locale is installed by default on the testing computer. Make sure that your solution use the point to separate the integer part of a real number from the decimal, not a comma.

Examples

input
5 50 1 2 3 4 5
output
12.000000 11.000000 10.000000 9.000000 8.000000

input
2 2 1 100
output
-1