

C. Tea Party

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Polycarp invited all his friends to the tea party to celebrate the holiday. He has n cups, one for each of his n friends, with volumes a_1, a_2, \dots, a_n . His teapot stores w milliliters of tea ($w \leq a_1 + a_2 + \dots + a_n$). Polycarp wants to pour tea in cups in such a way that:

- Every cup will contain tea for at least half of its volume
- Every cup will contain integer number of milliliters of tea
- All the tea from the teapot will be poured into cups
- All friends will be *satisfied*.

Friend with cup i won't be *satisfied*, if there exists such cup j that cup i contains less tea than cup j but $a_i > a_j$.

For each cup output how many milliliters of tea should be poured in it. If it's impossible to pour all the tea and satisfy all conditions then output -1 .

Input

The first line contains two integer numbers n and w ($1 \leq n \leq 100,$).

The second line contains n numbers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 100$).

Output

Output how many milliliters of tea every cup should contain. If there are multiple answers, print any of them.

If it's impossible to pour all the tea and satisfy all conditions then output -1 .

Examples

input
2 10 8 7
output
6 4

input
4 4 1 1 1 1
output
1 1 1 1

input
3 10 9 8 10
output
-1

Note

In the third example you should pour to the first cup at least 5 milliliters, to the second one at least 4, to the third one at least 5. It sums up to 14, which is greater than 10 milliliters available.