B. Cormen — The Best Friend Of a Man

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

Recently a dog was bought for Polycarp. The dog's name is Cormen. Now Polycarp has a lot of troubles. For example, Cormen likes going for a walk.

Empirically Polycarp learned that the dog needs at least k walks for any two consecutive days in order to feel good. For example, if $k = 5$ and yesterday Polycarp went for a walk with Cormen 2 times, today he has to go for a walk at least 3 times.

Polycarp analysed all his affairs over the next n days and made a sequence of n integers $a_1, a_2, ..., a_n$, where a_i is the number of times Polycarp will walk with the dog on the i-th day while doing all his affairs (for example, he has to go to a shop, throw out the trash, etc.).

Help Polycarp determine the minimum number of walks he needs to do additionaly in the next n days so that Cormen will feel good during all the n days. You can assume that on the day before the first day and on the day after the n-th day Polycarp will go for a walk with Cormen exactly k times.

Write a program that will find the minumum number of additional walks and the appropriate schedule — the sequence of integers $b_1, b_2, ..., b_n$ ($b_i \geq a_i$), where b_i means the total number of walks with the dog on the i-th day.

Input

The first line contains two integers n and k ($1 \leq n, k \leq 500$) — the number of days and the minimum number of walks with Cormen for any two consecutive days.

The second line contains integers $a_1, a_2, ..., a_n$ ($0 \leq a_i \leq 500$) — the number of walks with Cormen on the i-th day which Polycarp has already planned.

Output

In the first line print the smallest number of additional walks that Polycarp should do during the next n days so that Cormen will feel good during all days.

In the second line print n integers $b_1, b_2, ..., b_n$, where b_i — the total number of walks on the i-th day according to the found solutions ($a_i \leq b_i$ for all i from 1 to n). If there are multiple solutions, print any of them.

Examples

input
3 5 2 0 1
output
4 2 3 2

input
3 1 0 0 0
output
1 0 1 0

input

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4 6
2 4 3 5
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output

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0
2 4 3 5
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