Problem L. Lisa's Sequences

Time limit:	5 seconds
Memory limit:	1024 megabytes

Lisa loves playing with the sequences of integers. When she gets a new integer sequence a_i of length n, she starts looking for all *monotone* subsequences. A monotone subsequence $[l, r]$ is defined by two indices l and r ($1 \le l < r \le n$) such that $\forall i = l, l+1, \ldots, r-1 : a_i \le a_{i+1}$ or $\forall i = l, l+1, \ldots, r-1 : a_i \ge a_{i+1}$.

Lisa considers a sequence a_i to be *boring* if there is a monotone subsequence $[l, r]$ that is as long as her boredom threshold k, that is when $r - l + 1 = k$.

Lucas has a sequence b_i that he wants to present to Lisa, but the sequence might be boring for Lisa. So, he wants to change some elements of his sequence b_i, so that Lisa does not get bored playing with it. However, Lucas is lazy and wants to change as few elements of the sequence b_i as possible. Your task is to help Lucas find the required changes.

Input

The first line of the input contains two integers n and k ($3 \le k \le n \le 10^6$) — the length of the sequence and Lisa's boredom threshold. The second line contains n integers b_i ($1 \le b_i \le 99\,999$) — the original sequence that Lucas has.

Output

On the first line output an integer m — the minimal number of elements in b_i that needs to be changed to make the sequence not boring for Lisa. On the second line output n integers a_i ($0 \le a_i \le 100\,000$), so that the sequence of integers a_i is not boring for Lisa and is different from the original sequence b_i in exactly m positions.

Examples

standard input	standard output
5 3 1 2 3 4 5	2 1 0 3 0 5
6 3 1 1 1 1 1 1	3 1 100000 0 1 0 1
6 4 1 1 4 4 1 1	1 1 1 4 0 1 1
6 4 4 4 4 2 2 2	2 4 4 0 2 0 2
6 4 4 4 4 3 4 4	1 4 4 100000 3 4 4
8 4 2 1 1 3 3 1 1 2	2 2 1 1 3 0 1 0 2
10 4 1 1 1 2 2 1 1 2 2 1	2 1 1 100000 2 2 100000 1 2 2 1
7 5 5 4 4 3 4 4 4	0 5 4 4 3 4 4 4
10 10 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 0 1