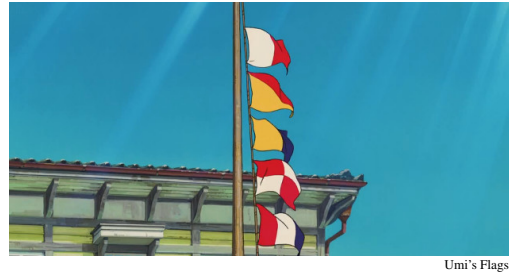


# Counting Staircases

## Problem ID: countingstaircases



Umi Matsuzaki is raising signal flags to wish sailors good luck. She has  $N$  flags with different heights. Her  $N$  flags are represented by distinct integers  $a_1, a_2, a_3, \dots, a_N$ , where  $a_i$  corresponds to the height of the  $i$ th flag.

Umi realizes that her signal flags are especially easy to see when they form patterns known as “staircases.” Umi knows a special width  $M$ . Then, define a “staircase” as a sequence of  $2M - 1$  flags such that the first  $M$  flag heights form an increasing sequence and the last  $M$  flag heights form a decreasing sequence. Formally, a staircase is a sequence of  $2M - 1$  flags whose heights are  $b_1, b_2, \dots, b_{2m-1}$ , where  $b_1 < b_2 < \dots < b_m$  and  $b_m > b_{m+1} > b_{m+2} \dots > b_{2m-1}$ .

Umi can rearrange her  $N$  flags in any order. She notices that there may be groups of consecutive  $2M - 1$  flags in her ordering that form staircases. Compute the maximum number of staircases possible after considering all rearrangements of her  $N$  flags. Also, give an ordering of Umi’s flags that produces this maximum number of staircases.

### Input

The first line of input contain two space-separated integers  $N$  ( $3 \leq N \leq 200\,000$ ), the number of flags Umi owns, and  $M$  ( $2 \leq M \leq \lceil \frac{N}{2} \rceil$ ), denoting that a staircase must consist of  $2M - 1$  flags. The second line of input contains  $N$  space-separated integers  $a_1, a_2, a_3, \dots, a_N$  where  $-10^5 \leq a_i \leq 10^5$ . Each  $a_i$  represents the height of the  $i$ -th flag, and all  $a_i$  are distinct.

### Output

The first line of output should contain the maximum amount of staircases possible in an ordering of Umi’s  $N$  flags. The second line of output should contain  $N$  space-separated integers, where the  $i$ -th integer corresponds to the height of the  $i$ -th flag in an optimal ordering of Umi’s flags. If there are multiple optimal orderings, you may output any such ordering.

#### Sample Input 1

```
8 2
-5 7 1 4 -3 6 2 11
```

#### Sample Output 1

```
3
-5 7 1 6 -3 4 2 11
```