

Watermelons

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Lazy Batyr loves to eat watermelons all year round. Additionally, he is quite sociable and friendly. That is why it's not surprising that he has K reliable friends.

At the moment, Batyr has n watermelons, and the weight of the i -th watermelon is a_i . Batyr is tired of eating watermelons by himself, so he decides to give away all the watermelons to his K friends in such a way that each watermelon goes to exactly one of his friends.

Batyr considers the distribution of watermelons to be *fair* if the following conditions are met:

1. Each friend receives at least one watermelon;
2. For each friend, the sum of the weights of the watermelons they receive does not exceed the sum of the weights of the watermelons given to the other friends.

Of course, it may turn out that it is impossible to divide the available watermelons as Batyr wants. In this case, he can buy several (possibly zero) watermelons from the experienced seller Abdou. Abdou has m watermelons, where the weight of the i -th watermelon is b_i .

Tell Batyr the minimum number of watermelons he should buy from Abdou to make a fair distribution, and also output the distribution itself. If a fair distribution does not exist, output -1 .

Input

The first line contains three integers n , m , and K ($3 \leq n \leq 5 \cdot 10^5$, $0 \leq m \leq 5 \cdot 10^5$, $3 \leq K \leq 5 \cdot 10^5$) — the number of watermelons Batyr has, the number of watermelons Abdou has, and the number of Batyr's friends, respectively.

The second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$) — the weights of Batyr's watermelons.

The third line contains m integers b_1, b_2, \dots, b_m ($1 \leq b_i \leq 10^9$) — the weights of Abdou's watermelons.

Output

The first line contains a single integer — the minimum number of purchased watermelons, or -1 if a fair distribution does not exist. If the answer exists, output two more lines as follows (note that the 3-th subtask does not need to print these two lines).

The second line contains n integers c_1, c_2, \dots, c_n ($1 \leq c_i \leq K$), where the i -th number c_i indicates which friend should receive the i -th watermelon of Batyr, if we number the friends from 1 to K .

The third line contains m integers d_1, d_2, \dots, d_m ($0 \leq d_i \leq K$), where the i -th number d_i means the following:

- If $d_i = 0$, then the i -th watermelon from Abdou does not need to be purchased;
- Otherwise, d_i is the number of the friend to whom it should be given if the i -th watermelon from Abdou was purchased.

If there are multiple suitable answers, output any.

Scoring

This problem contains 6 subtasks.

Subtask	Additional Constraints	Points
0	Examples	0
1	$m = 0, a_i = a_{i+1} (1 \leq i < n)$	9
2	$a_i = a_{i+1} (1 \leq i < n), b_j = b_{j+1} (1 \leq j < m)$	19
3	It is not necessary to print the distribution of watermelons	24
4	$m = 0$	20
5	$b_i = 1 (1 \leq i \leq m)$	10
6	—	18

Examples

standard input	standard output
3 2 4 3 2 3 10 9	2 4 3 3 1 2
5 2 4 4 9 3 52 7 35 5	1 2 3 1 1 4 4 0
4 1 3 1 2 4 10 2	-1

Note

In the first example, Batyr will have to buy both watermelons from Abdou. Then the watermelons can be distributed in such a way that the sum of the friends' watermelons will be $[10, 9, 5, 3]$, which is considered a fair distribution.

In the second example, it is enough to buy the first watermelon from Abdou. Then the watermelons can be distributed in such a way that the sum of the friends' watermelons will be $[55, 4, 9, 42]$, which is considered a fair distribution.

In the third example, it can be shown that a fair distribution does not exist.