B. Resort

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Valera's finally decided to go on holiday! He packed up and headed for a ski resort.

Valera's fancied a ski trip but he soon realized that he could get lost in this new place. Somebody gave him a useful hint: the resort has n objects (we will consider the objects indexed in some way by integers from 1 to n), each object is either a hotel or a mountain.

Valera has also found out that the ski resort had multiple ski tracks. Specifically, for each object v, the resort has at most one object u, such that there is a ski track built from object u to object v. We also know that no hotel has got a ski track leading from the hotel to some object.

Valera is afraid of getting lost on the resort. So he wants you to come up with a path he would walk along. The path must consist of objects $v_1, v_2, ..., v_k$ $(k \geq 1)$ and meet the following conditions:

1. Objects with numbers $v_1, v_2, ..., v_{k-1}$ are mountains and the object with number v_k is the hotel.
2. For any integer i $(1 \leq i < k)$, there is **exactly one** ski track leading from object v_i. This track goes to object v_{i+1}.
3. The path contains as many objects as possible (k is maximal).

Help Valera. Find such path that meets all the criteria of our hero!

Input

The first line contains integer n $(1 \leq n \leq 10^5)$ — the number of objects.

The second line contains n space-separated integers $type_1, type_2, ..., type_n$ — the types of the objects. If $type_i$ equals zero, then the i-th object is the mountain. If $type_i$ equals one, then the i-th object is the hotel. It is guaranteed that at least one object is a hotel.

The third line of the input contains n space-separated integers $a_1, a_2, ..., a_n$ $(0 \leq a_i \leq n)$ — the description of the ski tracks. If number a_i equals zero, then there is no such object v, that has a ski track built from v to i. If number a_i doesn't equal zero, that means that there is a track built from object a_i to object i.

Output

In the first line print k — the maximum possible path length for Valera. In the second line print k integers $v_1, v_2, ..., v_k$ — the path. If there are multiple solutions, you can print any of them.

Examples

input
5 0 0 0 0 1 0 1 2 3 4
output
5 1 2 3 4 5

input
5 0 0 1 0 1 0 1 2 2 4
output

```
2
4 5
```

input

```
4
1 0 0 0
2 3 4 2
```

output

```
1
1
```