G. Positivity

Difficulty: Hard **Time**: 1 s **Memory**: 1024 MB

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Egor has an array $a_1, a_2, ..., a_n$ of integers and a permutation $p_1, p_2, ..., p_n$ with $i \neq p_i$ for all i.

In the face of any setback, Egor focuses on staying positive! Or, in this case, not negative. He wants to make $a_i + a_{p_i}$ nonnegative for all i after applying at most $\lfloor \frac{n}{2} \rfloor$ operations. In one operation, he will choose x and negate both a_x and a_{p_x}.

Since we all love Egor and he has retired from competitive programming, you must help Egor choose the operation sequence!

Input

The first line contains a single integer n $(2 \leq n \leq 2 \cdot 10^5)$.

The second line contains n integers $a_1, a_2, ..., a_n$ $(|a_i| \leq 10^9)$.

The third line contains n integers $p_1, p_2, ..., p_n$, a permutation of $1, ..., n$ with $i \neq p_i$ for all i.

Output

On the first line, print the number of operations k $(0 \leq k \leq \lfloor \frac{n}{2} \rfloor)$.

On the second line, print the chosen indices $x_1, ..., x_k$ separated by a space, where x_i is the index selected in the i-th operation.

If there are multiple sequences of at most $\lfloor \frac{n}{2} \rfloor$ operations which make $a_i + a_{p_i}$ nonnegative for all i, you may output any one of them.

Sample 1

Input

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

Output

```
2
1 3
```

Explanation

In this case, we negate $a_1, a_{p_1} = a_2, a_3$, and $a_{p_3} = a_4$, resulting in the array $-3, 4, -5, 6$. In this array:

- $a_1 + a_{p_1} = a_1 + a_2 = -3 + 4 = 1 \geq 0$
- $a_2 + a_{p_2} = a_2 + a_1 = 4 - 3 = 1 \geq 0$
- $a_3 + a_{p_3} = a_3 + a_4 = -5 + 6 = 1 \geq 0$
- $a_4 + a_{p_4} = a_4 + a_3 = 6 - 5 = 1 \geq 0$

so the requirement $a_i + a_{p_i} \geq 0$ for all i is satisfied.

Of course, this is only one solution and there are others which work for this case.

Sample 2

Input

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

Output

```
3
1 3 5
```