D. Three Arrays

time limit per test: 1 second memory limit per test: 256 megabytes

input: standard input output: standard output

There are three arrays a, b and c. Each of them consists of n integers. SmallY wants to find three integers u, v, w ($0 \le u$, v, $w \le n$) such that the following condition holds: each number that appears in the union of a, b and c, appears either in the first u elements of a, or in the first v elements of b, or in the first v elements of v. Of course, SmallY doesn't want to have huge numbers u, v and v, so she wants sum u + v + w to be as small as possible.

Please, help her to find the minimal possible sum of u + v + w.

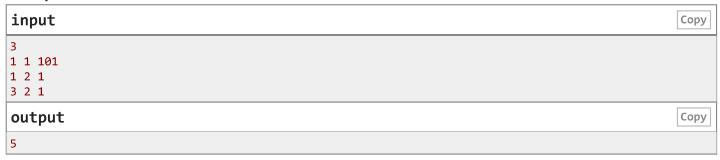
Input

The first line contains a single integer n $(1 \le n \le 10^5)$. The second line contains n space-separated integers $a_1, a_2, ..., a_n$ — array a. The third line contains the description of array b in the same format. The fourth line contains the description of array c in the same format. The following constraint holds: $1 \le a_i, b_i, c_i \le 10^9$.

Output

Print a single integer — the minimum possible sum of u + v + w.

Examples



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input

5
1 1 2 2 3
2 2 4 3 3
3 3 1 1 1

output

Copy

5
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Note

In the first example you should choose u = 3, v = 0, w = 2.

In the second example you should choose u = 1, v = 3, w = 1.