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 w elements of c. Of course, SmallY doesn't want to have huge numbers u, v and w, 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

input
3 1 1 101 1 2 1 3 2 1
output
5

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

Note

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

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