Problem C. Solve with Friends

Time limit:	2 seconds
Memory limit:	1024 megabytes

Namuka and Napuka have decided to solve all N problems, namely problem 1, problem 2, ..., problem N.

Initially, their tiredness are both 0, but solving a problem increases the tiredness of the person who solved it by 1. When solving Problem i with a current tiredness of j, Namuka-kun takes $A_i + C_j$ minutes, and Napuka-kun takes $B_i + D_j$ minutes. the two cannot solve problems simultaneously.

Find the minimum total time required for Namuka and Napuka to solve all N problems.

Constraints

- $1 \le N \le 2 \times 10^5$

- $1 \le A_i, B_i, C_i, D_i \le 10^9$

Input

The input is given in the following format from standard input:

N
$A_1\ A_2\ \ldots\ A_N$
$B_1\ B_2\ \ldots\ B_N$
$C_0\ C_1\ \ldots\ C_{N-1}$
$D_0\ D_1\ \ldots\ D_{N-1}$

Output

Output the answer.

Examples

standard input	standard output
3 1 3 5 6 4 2 1 2 3 1 2 3	10
5 2 4 3 1 2 9 2 5 3 8 1 2 8 3 2 5 4 3 2 1	28
8 21 85 72 22 81 20 88 28 75 22 78 92 55 56 73 44 39 14 64 27 73 42 16 84 27 7 91 85 69 95 70 27	621

Note

For the first sample case:

When Namuka solves problem 1 and problem 2 in order, and Napuka solves problem 3, the total time taken can be calculated as follows:

- Namuka solves problem 1. Namuka's current tiredness is 0, so it takes $A_1 + C_0 = 1 + 1 = 2$ minutes. Namuka's tiredness increases by 1.

- Namuka solves problem 2. Namuka's current tiredness is 1, so it takes $A_2 + C_1 = 3 + 2 = 5$ minutes. Namuka's tiredness increases by 1.

- Napuka solves problem 3. Napuka's current tiredness is 0, so it takes $B_2 + D_0 = 2 + 1 = 3$ minutes. Napuka's tiredness increases by 1.

Therefore, the total time is $2 + 5 + 3 = 10$ minutes, which is the minimum.