Problem E
Vibe Coding

Time Limit: 3.0 seconds

Shobon has decided to use a generative AI to help develop a software project. The project consists of N tasks. Each task i ($i = 1, 2, \ldots, N$) has a predetermined **implementation workload** A_i and **complexity** B_i.

Shobon can proceed with these tasks in any order. However, he cannot work on more than one task at the same time.

Each task i ($i = 1, 2, \ldots, N$) can be completed in one of the following two ways:

- **Implement the task manually.** Shobon writes the code himself, which takes A_i units of time.
- **Use the generative AI.** To make the AI generate correct code, Shobon explains the current task and all previously completed tasks to the AI. Let S be the sum of the complexities of all previously completed tasks. Preparing this explanation takes $S + B_i$ units of time. The AI then finishes the implementation instantly, so no additional implementation time is required. Thus, completing this task by using the AI takes a total of $S + B_i$ units of time.

Regardless of which method is used, once task i is completed, its complexity B_i is included in future values of S when using the generative AI.

Find the minimum total time required to complete all tasks.

Input

The input consists of three lines in the following format.

N
$A_1\ A_2\ \ldots\ A_N$
$B_1\ B_2\ \ldots\ B_N$

In the first line, the number of tasks, N, is given ($1 \leq N \leq 2 \times 10^5$). The second line contains N integers, $A_1, A_2, \ldots, A_N$, each between 1 and 10^9, inclusive, representing the implementation workloads of the N tasks. The third line contains N integers, $B_1, B_2, \ldots, B_N$, each between 1 and 10^8, inclusive, representing the complexities of the N tasks.

Output

Output in a line the minimum total time required to complete all tasks.

Sample Input 1

```
3
10 6 10
5 2 4
```

Sample Output 1

```
18
```

Sample Input 2

```
1
4
10
```

Sample Output 2

```
4
```

Sample Input 3

```
5
100 100 100 100 100
5 1 4 2 3
```

Sample Output 3

```
35
```

Sample Input 4

```
12
18 7 25 12 30 5 16 22 9 28 14 20
6 11 2 8 1 13 5 3 10 4 9 7
```

Sample Output 4

```
118
```

For Sample Input 1, consider using the generative AI for tasks 2 and 3 in this order, and then implementing task 1 manually.

- When task 2 is started, no task has been completed yet. This task takes $0 + B_2 = 2$ units of time.
- When task 3 is started, task 2 has been completed. This task takes $B_2 + B_3 = 2 + 4 = 6$ units of time.
- Finally, implementing task 1 manually takes $A_1 = 10$ units of time.

Thus, all tasks can be completed in $2 + 6 + 10 = 18$ units of time, which is the minimum possible.