Investing in Stocks (stocks)

An ever-increasing number of young people decides to try to make money online using live streaming platforms. Luca didn't want to miss out and a while ago started streaming gameplays, investing the earnings in his favourite company's stocks.

Luca's friends make fun of him using this meme.
Rightfully so: be careful before investing in stocks!

So far N purchases have been made, some with money coming directly from the streaming service (indicated with $S_i = 1$), others with money coming from different sources (thus, not from the streaming: $S_i = 0$). Luca kept a detailed log of the value of the stocks bought in the i-th purchase, amounting to V_i euros.

He is now reviewing the performance of his stock portfolio and notices that some periods have been particularly profitable. We consider an uninterrupted sequence of stock purchases **profitable** when the purchases have been only made with money coming from the streaming service *and* the amount bought each time never decreased.

He is now wondering: how profitable was the most profitable sequence? How much money has Luca invested during the **most profitable** sequence?

> ☞ Among the attachments of this task you may find a template file `stocks.*` with a sample incomplete implementation.

Input

The first line contains the only integer N. The second line contains N integers V_i. The third line contains N integers S_i.

Output

You need to write a single line with an integer: the total value of the stocks Luca bought in the most profitable sequence.

Constraints

- $1 \leq N \leq 1\,000\,000$.
- $1 \leq V_i \leq 1000$ for each $i = 0 \ldots N-1$.
- $S_i = 0$ or $S_i = 1$ for each $i = 0 \ldots N-1$.
- A sequence of just one purchase made with money from the streaming can already be considered a *profitable* one. It is always guaranteed that at least one profitable sequence exists.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (35 points) $S_i = 1$ for each $i = 0 \ldots N-1$.

– **Subtask 3** (25 points) $N \leq 1000$.

– **Subtask 4** (25 points) $N \leq 10\,000$.

– **Subtask 5** (15 points) No additional limitations.

Examples

input	output
4 100 120 130 80 1 1 1 1	350
4 100 120 130 80 1 1 0 1	220

Explanation

In the **first sample case** all the purchases have been made with money coming from the streaming service. The most profitable sequence consists of the first, the second and the third purchase, with an overall value of $100 + 120 + 130 = 350$ euros.

In the **second sample case** all the purchases *but the third one* have been made with money coming from the streaming service. The most profitable sequence consists just of the first and the second purchase, with an overall value of $100 + 120 = 220$ euros. Despite the non-decreasing price of the third purchase, that one was made with money coming from other sources.