Optimal Train Operation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

The UTPC Railway has $N+1$ stations arranged along a single line, numbered consecutively from 0 to N from the starting station to the terminal station. For each i $(0 \leq i \leq N-1)$, station i and station $i+1$ are adjacent, and the congestion level between these stations is C_i. Currently, "rail yards" are located at stations 0 and N.

In the next timetable revision, rail yards will be constructed by repeating the following operation multiple times:

- Select a station i $(1 \leq i \leq N-1)$ and build a rail yard there. This operation costs A_i.

Next, trains will be operated between rail yards by repeating the following operation multiple times:

- Select stations l and r $(l < r)$ where rail yards are located and operate a train between these stations. This operation decreases the congestion level between stations i and $i+1$ $(l \leq i < r)$ by 1. This operation costs $r - l$.

The goal of the timetable revision is to reduce the congestion level between stations i and $i+1$ $(0 \leq i \leq N-1)$ to 0 or below. Calculate the minimum total cost required for constructing rail yards and operating trains to achieve this goal.

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{llll}
N & & & \\
C_0 & C_1 & \ldots & C_{N-1} \\
A_1 & A_1 & \ldots & A_{N-1}
\end{array}
$$

- All values in the input are integers.
- $2 \leq N \leq 5 \times 10^5$
- $1 \leq C_i \leq 10^9 \quad (0 \leq i \leq N-1)$
- $1 \leq A_i \leq 10^9 \quad (1 \leq i \leq N-1)$

Output

Output the answer.

Examples

standard input	standard output
4 3 1 4 1 5 9 2	15
9 28 35 19 27 84 98 78 79 60 40 35 54 63 72 71 27 94	682

Note

In the first example, a rail yard is established at station 3, and 3 trains are set between stations 0 and 3, and 1 train is set between stations 0 and 4. As a result, the congestion level of each section becomes 0 or less, and the total cost is 15. This is the minimum cost.