

## Problem E. Efficient Partitioning

Input file: *standard input*  
Output file: *standard output*  
Time limit: 2 seconds  
Memory limit: 512 mebibytes

Let a *partition* of  $[0, N)$  be an integer sequence  $S = (s_0, \dots, s_r)$  that satisfies the following three conditions:

- $s_0 = 0$ ,
- $s_r = N$ ,
- $s_i < s_{i+1}$  ( $0 \leq i < r$ ).

That is, for each  $i$ ,  $[s_i, s_{i+1})$  represents a continuous interval, and  $[0, N)$  is the union of these  $r$  intervals.

Given are three sequences of length  $N$  consisting of integers between  $-10^9$  and  $10^9$ :  $A (a_0, \dots, a_{N-1})$ ,  $B (b_0, \dots, b_{N-1})$ ,  $C (c_0, \dots, c_{N-1})$ .

Let the score of partition  $S$  be  $f(S)$  defined as follows:

$$f(S) = \min_{0 \leq i < r} \left\{ b_{s_i} + c_{s_{i+1}-1} + \sum_{s_i \leq j < s_{i+1}} a_j \right\}$$

Find the maximum value of  $f$  over all possible partitions  $S$ .

### Input

The first line of input contains one integer  $N$  ( $1 \leq N \leq 2 \cdot 10^5$ ). The second line contains  $n$  integers:  $i$ -th of them denotes  $a_i$ . The third and fourth lines describe the sequences  $b$  and  $c$  in the same format ( $-10^9 \leq a_i, b_i, c_i \leq 10^9$ ).

### Output

Print one integer: the maximum score over all possible partitions.

### Examples

standard input	standard output
2 1 -1 -1 4 1 -2	1
1 1000000000 1000000000 1000000000	3000000000