

Problem H. Crazy Driver

Time limit 1000 ms
Mem limit 1048576 kB
OS Linux

In the Linear City, there are N gates arranged in a straight line. The gates are labelled from 1 to N . Between adjacent gates, there is a bidirectional road. Each road takes one hour to travel and has a toll fee. Since the roads are narrow, you can only travel from gates to gates but cannot U-turn between gates.

Crazy driver Gary starts at Gate 1 at time 0 and he wants to drive through Gate N while minimizing the cost of travelling. However, Gate i only allows a car to pass through after a certain time T_i . As Gary is crazy, his car will always be traveling on any one of the roads, i.e., it will not stop at a gate. What is the minimum cost for him to drive through Gate N ?

As an example, consider the sample input below. An optimal solution is the following:

1. Gate 1 to Gate 2 (cost 5)
2. Gate 2 to Gate 1 (cost 5)
3. Gate 1 to Gate 2 to Gate 3 (cost 9)
4. Go between Gate 3 and Gate 4 until 7-th hour (cost 6)
5. Go to and pass through Gate 5 (cost 8)

Input

The first line contains an integer, N ($2 \leq N \leq 10^5$), the number of gates. The second line has $N - 1$ integers, C_1, \dots, C_{N-1} . C_i ($1 \leq C_i \leq 10^6$) represents the toll fee of the road between Gate i and Gate $i + 1$. The third line has N integers, T_1, \dots, T_N . T_i ($0 \leq T_i \leq 10^6$) represents the opening time (in hour) for each gate. T_1 will always be 0.

Output

Output an integer representing the minimum cost of traveling.

Sample 1

Input	Output
5 5 4 2 8 0 2 4 4 8	33