



Problem A. Traffic Light

TimeLimit: 0.5 seconds
MemoryLimit: 256 megabytes

“Oh My God! It is almost contest now!”

Mr. Guan just woke up and found that it was already very late! He needs to participate in the I2CP contest today.

Guan is going from his home to school. His home is located at position 0 on a number line, and the school is at position c ($c > 0$). Guan walks 1 unit per second in the positive direction. Along the way, there are n traffic lights.

The i -th traffic light is located at position p_i ($0 < p_i < c$). Starting from the moment Guan leaves home (time $t = 0$), this traffic light alternates green for g_i seconds, then red for r_i seconds, repeating this pattern forever. In other words, the light’s cycle length is $T_i = g_i + r_i$, and it is green during time intervals $[k \times T_i, k \times T_i + g_i)$ for every nonnegative integer k . It is red during the remaining time intervals.

Guan starts at position 0 at time $t = 0$ and moves forward at a speed of one unit per second. When he arrives at a traffic light at position p_i , he checks the light’s color at the same time. If it is green, he continues moving immediately. If it is red, he must wait at that position until it turns green again before continuing his journey.

Your task is to determine the earliest possible time (in seconds) when Guan can reach his school at position c .

Input

The first line contains a single integer n and c — the number of traffic lights and the position of the school.

The second line contains n integers p_i — the position of the i -th traffic light.

The third line contains n integers g_i — the seconds of the green light for the i -th traffic light.

The fourth line contains n integers r_i — the seconds of the red light for the i -th traffic light.

- $1 \leq n \leq 5 \times 10^5$
- $1 \leq p_1 < p_2 < \dots < p_n < c \leq 10^9$, i.e., $p_i < p_{i+1}$ for all $1 \leq i < n$.
- $1 \leq g_i, r_i \leq 10^9$ for all $1 \leq i \leq n$

Output

Print an integer — the earliest possible time when Mr. Guan can reach his school at position c .

Examples

standard input	standard output
3 10 3 5 8 5 2 4 3 7 4	18
5 6 1 2 3 4 5 1 1 1 1 1 1 10 100 1000 10000	10002