True Story

Input file:	**standard input**
Output file:	**standard output**
Time limit:	1 second
Memory limit:	256 megabytes

Chengdu Shuangliu International Airport is the major international airport serving Chengdu, the capital of Sichuan province, China. It handled 55.9 million passengers in 2019, being among the world's 25 busiest airports in 2019, the fourth-busiest in mainland China, and the busiest in western China.

Ema and her friends are gonna be late for their flight. Now at the beginning of hour 0, they are x km away from the airport, and the boarding time is at the beginning of hour p_0. There are n people in total (Ema herself included), and the i-th one can travel at a speed of s_i km/h. They will have to reach the airport not later than the boarding time to catch the plane.

However, all is not lost. Ema knows the boarding time will be postponed. The boarding time will be postponed k times: The i-th one will be announced at the beginning of hour t_i, and postpone the time later to the beginning of hour p_i. There are still challenges, though, as everyone will only move when he/she can catch the plane in time. That is if the current time before boarding is not enough for him/her to arrive at the airport, he or she will stop moving and just stay at that point; Otherwise, he/she will move on again from where he/she has stopped, or just keep on moving.

Note that every time the boarding time is postponed, everyone will instantly change their action accordingly. Also, everyone only knows the postponement when it is announced, and cannot act on it beforehand.

Please calculate how many people can catch the plane in the end.

Input

There is only one test case in each test file.

The first line contains four integers n, k, x and p_0 ($1 \le n, k \le 10^5$, $1 \le x, p_0 \le 10^9$) indicating the number of people, the number of postponement, the distance from the starting point to the airport and the initial boarding time.

The second line contains n integers $s_1, s_2, \cdots, s_n$ ($1 \le s_i \le 10^9$) indicating the speed of the i-th person.

The third line contains k integers $t_1, t_2, \cdots, t_k$ ($1 \le t_i \le 10^9$, $t_i < t_{i+1}$, $t_i < p_{i-1}$) indicating the hour when the i-th postponement is announced.

The fourth line contains k integers $p_1, p_2, \cdots, p_k$ ($1 \le p_i \le 10^9$, $p_i < p_{i+1}$) indicating the hour the boarding time is postponed to in the i-th announcement.

Output

Output one line containing one integer indicating the number of people that can catch the plane eventually.

Examples

standard input	standard output
4 3 10 4 1 5 2 1 3 4 5 7 9 10	2
1 3 10 3 1 2 3 4 5 8 10	0

Note

For the first sample test case, at the beginning of hour 0 only the person with speed 5km/h starts moving an arrives at the airport at the beginning of hour 2. Then at the beginning of hour 4 the person with speed 2km/h also starts moving an arrives at the airport at the beginning of hour 9. Only these two people can catch the plane and the other two never moves, as none of the three postponements allow them to arrive in time.

For the second sample test case the only person never moves. If he were to start moving from the very beginning he would catch the plane, however he chose to give up. This story tells us that not all efforts result in success, but giving up is sure to result in failure.