

Swiss System

Problem Description

$2*N$ players numbered from $1 \sim 2N$ play R rounds in total. Before the start of each round, as well as after all competitions, the contestants are ranked in descending order of their total score. The total score of a contestant is the sum of the initial score before the start of the first round plus the score of all competitions in which the player has participated. For the players with the same total score, the player with the smaller serial number is ranked first.

The match-up arrangement of each round is related to the ranking before the start of each round: 1^{st} and 2^{nd} , 3^{rd} and 4^{th} ,... $(2k-1)^{\text{th}}$ and $2k^{\text{th}}$..., $(2N-1)^{\text{th}}$ and $2N^{\text{th}}$, each play a match. In each game, the winner gets 1 point and the loser gets 0 points. This means that, except for the first round, the arrangement of the other rounds cannot be determined in advance, but depends on the performance of the players in the previous matches.

Now, given each player's initial score and strength, try to calculate the serial number of the player ranked Q after R rounds. We assume that players have different strength values and that the one with the higher strength value in each match always wins.

Input

The first line of the input is three positive integers N , R , and Q , separated by a space to indicate that there are $2*N$ players, R rounds, and the ranking Q which we care about.

The second line contains $2*N$ non-negative integers s_1, s_2, \dots, s_{2N} , every two numbers are separated by a space, where s_i denotes the initial score of the player numbered i .

The third row contains $2*N$ positive integers w_1, w_2, \dots, w_{2N} , every two numbers are separated by a space, where w_i represents the strength value of the player numbered i .

$1 \leq N \leq 100,000, 1 \leq R \leq 50, 1 \leq Q \leq 2N, 0 \leq s_1, s_2, \dots, s_{2N} \leq 10^8, 1 \leq w_1, w_2, \dots, w_{2N} \leq 10^8$

Output

The output is a single line that contains an integer, which is the serial number of the player ranked Q^{th} after R rounds.

Sample Input

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2 4 2
7 6 6 7
10 5 20 15
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Sample Output

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1
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