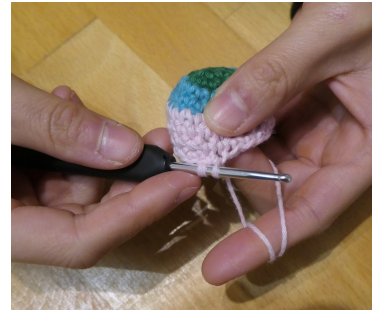


Problem G: Gorgeous Garment

Time limit: 1.5 seconds

It is absolutely freezing outside, and you are in desperate need of a new hat. Since you have just found a nice crocheting pattern for a hat, you want to make it yourself. The pattern is crocheted round by round and consists of n rounds in total, where each round i consists of t_i stitches. Round 1 is the most inner round. Since the hat is wider at the edges, the rounds get larger towards the outer edges, i.e. $t_{i+1} \geq t_i$ for all $1 \leq i \leq n - 1$.



Crocheting a (tiny) hat.

Further, you have k different colours of yarn c_1, c_2, \dots, c_k which you want to use in exactly this order for the hat. At the start of each round, you can either decide to continue with the current colour or to switch to the next colour. Within a round, you cannot switch to another colour. For aesthetic reasons, you want the “colour stripes” to get wider towards the outer edges, i.e. you want to use colour c_{i+1} for at least as many rounds as colour c_i for all $1 \leq i \leq k - 1$.

Unfortunately, you only have a limited amount of each kind of yarn and the amount of colour c_i you have at hand suffices only for s_i stitches. You decide to just start with round 1 and to crochet as many rounds as possible such that each colour stripe is at least as wide as the previous one.

Note that it is possible to use a colour for 0 rounds.

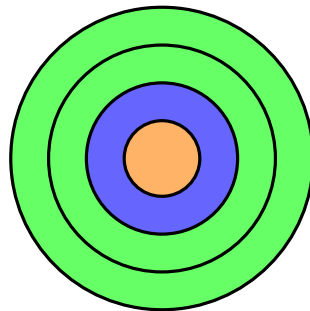


Figure G.1: Sample Input 2: The first round can be crocheted using c_1 colours, the second round using c_2 and the third and fourth round using c_3 . The only other optimal solution is to use c_1 for zero rounds and to crochet round 1 and 2 using c_2 and round 3 and 4 using c_3 . Note that it is not possible to use both c_1 and c_2 for two rounds and to use c_3 for zero rounds.

What is the maximum number of rounds of the given pattern you can crochet with the yarn you have?

Input

The input consists of:

- One line with two integers n ($1 \leq n \leq 10^5$) and k ($1 \leq k \leq 10^5$), the number of rounds in the pattern and the number of different colours.
- One line with n integers, where the i th integer represents the number t_i of stitches in round i . It is $t_{i+1} \geq t_i$ for all $1 \leq i \leq n - 1$, $1 \leq t_1$ and $t_n \leq 10^5$.
- One line with k integers, where the i th integer represents the number s_i ($1 \leq s_i \leq 10^5$) of stitches you can crochet using colour c_i .

Output

Output the maximum number of rounds of the given pattern you can crochet with the yarn you have such that each colour stripe is at least as wide as the previous one.

Sample Input 1

```
5 3
1 2 3 4 5
4 5 1
```

Sample Output 1

```
1
```

Sample Input 2

```
6 3
1 2 3 4 5 7
4 10 7
```

Sample Output 2

```
4
```