Eugeny and Play List

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Eugeny loves listening to music. He has n songs in his play list. We know that song number i has the duration of t_i minutes. Eugeny listens to each song, perhaps more than once. He listens to song number i c_i times. Eugeny's play list is organized as follows: first song number 1 plays c_1 times, then song number 2 plays c_2 times, ..., in the end the song number n plays c_n times.

Eugeny took a piece of paper and wrote out m moments of time when he liked a song. Now for each such moment he wants to know the number of the song that played at that moment. The moment x means that Eugeny wants to know which song was playing during the x-th minute of his listening to the play list.

Help Eugeny and calculate the required numbers of songs.

Input

The first line contains two integers n, m $(1 \le n, m \le 10^5)$. The next n lines contain pairs of integers. The i-th line contains integers c_i, t_i $(1 \le c_i, t_i \le 10^9)$ — the description of the play list. It is guaranteed that the play list's total duration doesn't exceed $10^9 (\sum_{i=1}^{n} c_i \cdot t_i \le 10^9)$.

The next line contains m positive integers $v_1, v_2, ..., v_m$, that describe the moments Eugeny has written out. It is guaranteed that there isn't such moment of time v_i, when the music doesn't play any longer. However, it is not guaranteed that v is sorted (order is arbitrary).

The moment of time v_i means that Eugeny wants to know which song was playing during the v_i-th minute from the start of listening to the playlist.

Output

Print m integers — the i-th number must equal the number of the song that was playing during the v_i-th minute after Eugeny started listening to the play list.

Examples

input

```
1 2
2 8
1 16
```

output

```
1
1
```

input

```
4 9
1 2
2 1
1 1
2 2
1 2 3 4 5 6 7 8 9
```

output

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