

## Problem A. Admission

Time limit 1000 ms

Memory limit 256MB

### Problem Description

The annual application for Bachelor admission at National Yang Ming Chiao Tung University is coming. Thousands of high school students have applied.

Since professors are too busy to carefully read every application document, they decide to sort all applicants only by their grades in each subject.

Each applicant has grades in  $m$  subjects. The professors also provide a sorting priority (an  $m$ -permutation), which specifies the order of importance of the subjects.

When comparing two applicants: Start with the most important subject (the first in the permutation).

1. The applicant with the higher grade should be ranked earlier.
2. If their grades are the same, move to the next subject in the permutation.
3. If all subjects are the same, the applicant with the smaller id is ranked earlier.

You are asked to output the sorted list of applicant IDs.

### Input format

The first line contains two integers  $N$  and  $M$  ( $1 \leq N \times M \leq 2 \times 10^5$ ) — the number of applicants and the number of subjects.

The next  $N$  lines each contain  $M$  integers, where the  $j$ -th number in the  $i$ -th line is  $a_{i,j}$  ( $1 \leq a_{i,j} \leq 10^9$ ), which is the grade of applicant with index  $i$  in subject  $j$ .

The last line contains  $M$  numbers  $o_i$  ( $1 \leq o_i \leq M$ ), which is a permutation of  $1 \sim M$ , describing the priority order of the subjects (from most to least important).

### Output format

Print the sorted list of  $N$  applicant IDs (from 1 to  $n$ )

### Subtask score

Subtask	Score	Additional Constraints
1	12	$M = 2, N \times M \leq 3000$
2	34	$M = 2$
3	26	$N \times M \leq 3000$
3	28	No constraints

## Sample

### Sample Input 1

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

### Sample Output 1

```
2 1 3
```

### Sample Input 2

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

### Sample Output 2

```
2 1 3
```