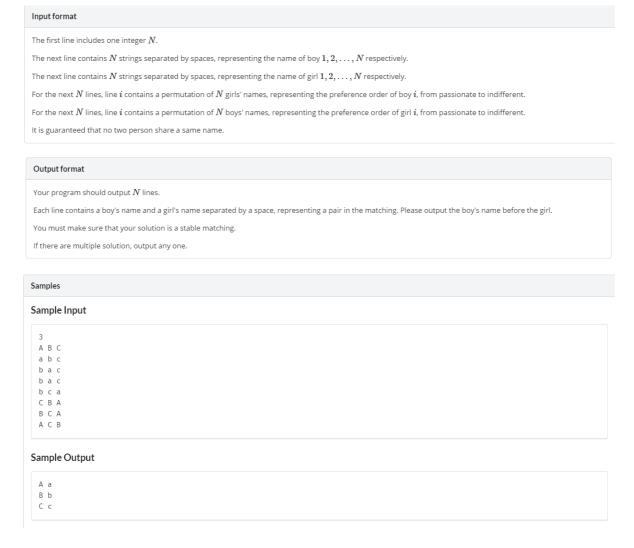
A. Stable Matching

Description

There are N single boys and N single girls waiting to be matched.

Each boy has his own preference order of all N girls, and each girl has her own preference order of all N boys.

As you are a well-known matching master, they wish that you find a **stable matching** for them!



B.College Admission

Description

 ${\it N}$ students are making college application among ${\it M}$ colleges.

The students are numbered as $1\dots N$ and colleges are numbered as $1\dots M$. Each student can be enrolled to at most one college. College i can enroll at most cap_i

Each student has his/her evaluation towards these M colleges. Student i's evaluation towards college j is a nonzero integer $s_{i,j}$ (possibly negative). It is guaranteed that $s_{i,j}$ is unique among $s_{i,1}, s_{i,2}, \dots, s_{i,m}$.

Each college has its evaluation towards these N students. College i's evaluation towards student j is a nonzero integer $c_{i,j}$ (possibly negative). It is guaranteed that $c_{i,j}$ is unique among $c_{i,1}, c_{i,2}, \ldots, c_{i,n}$.

If student i is eventually enrolled to some college j, his/her satisfaction value will be $s_{i,j}$. Otherwise, the value will be 0. Note that a student may not be enrolled to any college because of either being rejected, or he/she prefers not going to college than any other choices.

If college i eventually enrolls a set of students (denoted by A), its satisfaction value will be $\sum_{x \in A} c_{i,x}$.

Each student or college will try to maximize its satisfaction value. Please find a stable matching for this scenario, where:

- No student prefers not to go to college than to reserve his/her current admission.
- No college prefers to abandon an enrolled student than to reserve him/her.
- ullet There is not any pair (s,c), such that
 - $\circ \;\;$ student s is not enrolled to college c
 - $\circ \ \ \mathsf{student} \ \mathit{s} \ \mathsf{prefers} \ \mathsf{college} \ \mathit{c} \ \mathsf{than} \ \mathit{s} \mathsf{'s} \ \mathsf{current} \ \mathsf{admission} \ \mathsf{state} \ \mathsf{(i.e.} \ \mathsf{being} \ \mathsf{enrolled} \ \mathsf{to} \ \mathsf{some} \ \mathsf{college}, \ \mathsf{or} \ \mathsf{unmatched)$
 - o either c is capable to enroll more student and s can increase c's satisfaction value, or c prefers s than some other student s' that has been enrolled to c

If there are multiple solutions, output any one.

Input format

The first line includes two integers N,M.

The next line contains M integers $cap_1, cap_2, \ldots, cap_M$.

For the next N lines, line i contains M integers $s_{i,1}, s_{i,2}, \ldots, s_{i,M}$

For the next M lines, line i contains N integers $c_{i,1}, c_{i,2}, \ldots, c_{i,N}$

Output format

Your program should output ${\cal M}$ lines.

 $\ \ \, \text{Line} \ \textit{i} \ \text{depicts the admission of college} \ \textit{i}. \ \text{First, output the number of students enrolled to college} \ \textit{i}. \ \text{Then, output the IDs of those students}.$

You must make sure that your solution is a stable matching.

Sample Input

- 3 2
- 3 3 3 4
- -1 2
- 3 2
- -1 2 3

Sample Output

1 1 2 2 3