Amazing Whispers

A group of friends want to play the game Amazing Whispers, where a secret phrase is transferred among a collection of people according to the following rules:

You have $N \times M$ people arranged in M groups of N people each. A secret phrase is divided into N distinct messages, and each member in group 1 receives a different message. The messages are then transmitted from group 1 to 2, then from 2 to 3, and so on, until finally they are delivered from group $M - 1$ to group M. Each message in the phrase shall be transmitted, but no indivdual should hear more than a single message.

In order to make it harder for an observer to trace the messages, each person in group i will act as if they are whispering to up to N people in group $i + 1$. Only one of those people will actually get to hear the message - for the rest of them, the sender will merely pretend to whisper. This way it will be impossible for an observer to tell which person in group $i + 1$ actually received the message. The people in group i have arranged it so that each person in group $i + 1$ will get to hear exactly one message each.

When all the messages have reached group M they get read aloud. As it turns out, all the messages have been received successfully, except for one which has been replaced with a rude word. Person A started with the lost message, and person B was the one who read the rude word aloud. You do not know at what stage the substitution was made. Who could have been guilty of this prank? You do not know how the messages were transmitted. All you know is the pairs of people who acted as if they were whispering.

Input

The first line contains four integers N M A B, as specified in the problem statement. The people are numbered from 0 to $(N \times M) - 1$, with person p belonging to group $\lfloor p/N \rfloor + 1$. ($\lfloor x \rfloor$ represents the greatest integer that is not greater than x.)

Next follows $N \times (M - 1)$ lines. The ith of these describe whom the ith person acts as if they are whispering to.

Each of these lines begin with a single number K_i, the number of people that person i acts as if they are whispering to. Following this are K_i integers, $R_{i,0} \ldots R_{i,K_i-1}$ specifying who those people are. As these people will always belong to the next group after the one containing person i, these numbers will satisfy $\lfloor R_{i,j}/N \rfloor = \lfloor i/N \rfloor + 1$.

Output

The first line of output should contain a single integer S, the number of people who could have been guilty of the prank. The next S lines should list out who those people are, one person per line, in increasing numerical order.

Constraints

$2 \leq N \leq 20$

$2 \leq M \leq 1\,000$

The sum of all K_i is less than or equal to 5 000

The input describes a valid way of performing the whispers.

Time limit: 1 s.

Subtask	Score	Additional constraints
Subtask 1	18	$N = 2$
Subtask 2	16	$M = 3$; $N \leq 8$
Subtask 3	19	$M = 3$
Subtask 4	47	No additional constraints

Examples

Input	Output
2 3 1 5 1 3 1 2 2 5 4 2 4 5	3 1 2 5

Input	Output
3 3 0 6 1 4 1 5 1 3 1 7 2 6 7 1 8	3 0 4 6