Problem G. Video Arcade Machines

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

Little Vitechka and his $n-1$ friends came to the video arcade hall. There were m video arcade machines. Each of n persons immediately decided how many minutes he wanted to play each of m machines. Now they want to do it as quickly as possible, so that they have enough time to watch a film in the cinema.

Help them to develop an optimal strategy.

Each person can simultaneously play at most one machine, and each machine can be simultaneously played by at most one person. Each person can pause playing each arcade machine, and start playing again later, as many times as they want: only the total time playing each machine is important.

Input

The first line contains two integers n and m ($1 \le n, m \le 120$).

Each of the next n lines carries m nonnegative integers not exceeding 10^9. The j-th number in the $(i+1)$-st line equals to the number of minutes which the i-th person wants to play the j-th machine.

Output

Output the strategy as several periods. A period defines the distribution of players among machines and the time allotted for it. The number of such periods must be no greater than $2 \cdot 10^4$.

On the first line, print two integers t и k: the minimum possible time the playing will take and the number of periods.

Each of the next k lines must describe a single period. The description of each period must start with a nonnegative integer: the number of minutes allotted for the period. After that, print n integers defining the distribution. The i-th of these numbers must be equal to the number of the machine which the i-th person will play for the whole time of the period, or zero if that person won't be playing for the whole period.

After your strategy is executed, each person must play each machine exactly as much minutes as he wants.

Example

standard input	standard output
2 3 0 1 2 4 0 0	4 3 1 0 1 1 2 1 2 3 1