Problem C. Spatial Thinking

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

Little Vitechka boasted to little Mitechka that he is quite familiar with n-dimensional space. Mitechka didn't believe him and bet that Vitechka wouldn't be able to partition an n-dimensional cube into n-dimensional simplices. Here, a simplex is a body in n-dimensional space with $(n + 1)$ vertices each of which coincides with one of the cube's vertices. Additionally, the n-dimensional volume of a simplex must not be zero.

To make sure that Vitechka's partitioning is correct, they agreed to act as follows: Mitechka arranges a list of m points inside a cube; then Vitechka constructs a set of simplices, and for each point from Mitechka's list, he specifies a certain simplex from his set. After that, Mitechka does two validations. First: the sum of n-dimensional volumes of simplices given by Vitechka must be equal to the volume of the cube. Second: each point from Mitechka's list must lie either inside or on the border of the simplex specified for this point by Vitechka. If both these tests are successful, Mitechka has to declare Vitechka a winner.

So they agreed. But having started to do the task, Vitechka realized that he had overrated his power. Now he needs your help.

The cube is set by the inequality system $0 \le x_i \le 1$.

Input

The first line contains two integers n and m ($2 \le n \le 8$, $0 \le m \le 10^5$). Each of the following m lines contains n numbers which are the coordinates of points. All coordinates are real values from 0 to 1 with no more than five decimal digits after the point.

Output

On the first line, print t, the number of simplices. On each of the following t lines, print $n \cdot (n+1)$ numbers. The $(n \cdot (j-1) + i)$-th number in the $(k+1)$-st row must be the i-th coordinate of the j-th vertex of the k-th simplex. Each coordinate must be equal to either 0 or 1.

After that, print m lines. In the $(i + t + 1)$-th line display the number of simplex, which contains the i-th point.

The answer is considered to be correct if the sum of simplex volumes is equal to 1, and each of the m given points lies inside or on the border of the corresponding specified simplex.

Example

standard input	standard output
2 3 0 1 0.5 0.5 1 0	2 0 0 0 1 1 1 0 0 1 0 1 1 1 1 2