Winning Tetris (tetris)

Tommaso is one of the best Tetris players in the world. Today he became bored of playing the game and decided to create a different version. He wants to fill a $N \times M$ grid with the standard Tetris pieces.

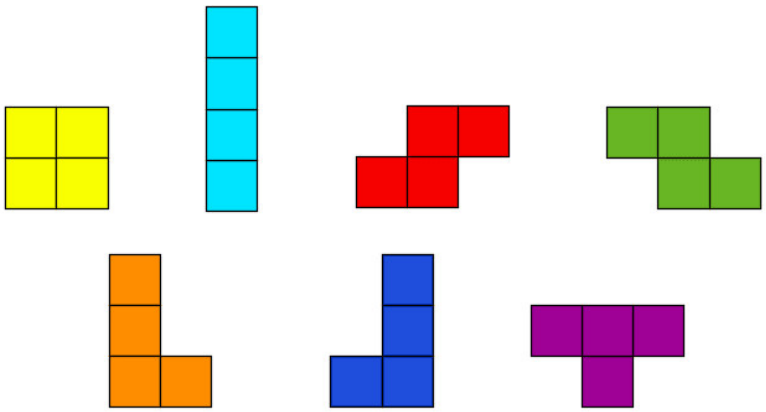

Figure 1: All the pieces avaiable to Tommaso.

The pieces can be rotated, but they cannot overlap or go outside the grid. Help Tommaso by writing a program that, given the size of the grid, finds a way to completely fill it with tetris pieces.

> ☞ Among the attachments of this task you may find a template file `tetris.*` with a sample incomplete implementation.

Input

The first line contains the integers N and M.

Output

If it is not possible to fill the grid, you need to write a single line with the number -1.
Otherwise on the first line you need to write the number K of pieces used to fill the grid. Then you need to write N lines with M numbers each, where the j-th number of the i-th line is the number of the piece used to fill the cell (i, j). The different pieces must be numbered from 0 to $K - 1$.

Constraints

- $1 \leq N \leq 500$.
- $1 \leq M \leq 500$.
- If there are multiple solutions, you can print any of them.
- Tommaso has an infinite amount of pieces of each type.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (20 points) $N, M \leq 4$.

– **Subtask 3** (30 points) $N, M \leq 50$.

– **Subtask 4** (50 points) No additional limitations.

Examples

input	output
2 3	-1
4 3	3 0 0 0 1 2 0 1 2 2 1 1 2

Explanation

In the **first sample case** there is no way to completely fill a 2×3 grid.

In the **second sample case** a possible way to fill the grid is shown in the image below: