

Problem C

Decode The Cipher

Time limit: 1 second
Memory: 1024 megabytes

Problem Description

In a Teambuilding game, your group faces a special challenge: decoding a cipher message. This cipher is represented as a rectangular grid of numbers with dimensions $M \times N$. Each cell in the grid contains a positive integer. Your task is to decode the information in the grid by tracing a spiral pattern in a clockwise direction.

Your team has deduced that the only way to decipher the cipher is to first sort all the numbers in the grid in ascending order and then place them back into the grid following a spiral path, starting from the top-left corner and moving in a clockwise direction outward.

The spiral path is a special pattern that requires careful tracking. It begins at the top-left corner of the grid, moves right, then down, left, up, and continues in this manner until all values are placed in the grid.

Problem Requirements: Your task is to write a program that sorts the numbers in the grid in ascending order and fills them back into the grid following the spiral path. The final result should be a new grid with the numbers arranged and placed in the correct order according to the special path.

Input Structure:

- The first line contains two positive integers M and N (with $M, N \leq 1000$).
- The following M lines each contain N positive integers, with values no greater than 1000. The numbers in each line are separated by a space.

Output Structure:

- The program will output M lines, each containing N integers arranged according to the spiral order. The numbers in each line should be separated by a space.

Example:

INPUT	OUTPUT
4 5	0 1 1 1 2
2 5 1 7 9	5 6 7 8 2
1 12 2 5 6	5 12 11 9 2
0 3 3 1 8	4 4 3 3 3
4 11 4 2 3	