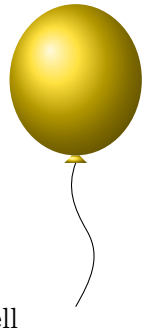
XAPC > badas
Algorithmic Programming Contest

J Dangerous Maze



Time limit: 3.0s
Memory limit: 256MB

In an abandoned industrial complex, represented by a grid of M rows and N columns, each cell (i, j) has an altitude $h_{i,j}$. A toxic gas begins to fill the complex. If the gas reaches a height H, all cells whose altitude is strictly less than H become impassable ($h_{i,j} < H$). Cells where $h_{i,j} \geq H$ remain safe.

You are initially at cell $(1, 1)$ (top left) and must reach the exit located at cell (M, N) (bottom right). You can move horizontally or vertically between two adjacent cells, provided that both cells are passable.

Your goal is to determine the maximum value of H such that there still exists a path between the entrance and the exit. Note that the entrance and the exit themselves must also be passable.

Input

The first line contains two integers M and N ($1 \leq M, N \leq 500$). The next M lines each contain N integers $h_{i,j}$ ($0 \leq h_{i,j} \leq 10^9$).

Output

A single integer: the maximum gas height H.

Samples

Sample input 1	Sample output 1
3 3 10 5 8 2 3 12 15 10 10	5