Table Cloth

There is a rectangle-shaped table with n rows and m columns. The top left hand corner is (1,1), while the bottom right hand corner is (n,m). Now, Kenny wants to cover this table with cloth, but instant of covering it with one big cloth, he wants something special. He defines some sticky grids, (x,y), on the table. Kenny will not define any sticky grids on four corners. Then, he wants to put the table cloth from one of the four corners to any sticky grids defined, until the whole table is covered with table cloth. The sticky grid can stick multiple table cloth on top of it. Kenny asks you to help him to find the minimum number of table cloth is needed with these constraints. Notice that you don't need to use all sticky grids, and you can use the same sticky grid multiple times.

Input

There are multiple test cases.
For each test case, there are pair of integers, n and m (2 < n,m <= 50), representing the size of the table, then followed by n rows of integers, separated by a space. The sticky grid is indicated as "1", while the normal grid is indicated as "0". It is guarantee that the four corners of the table are "0"
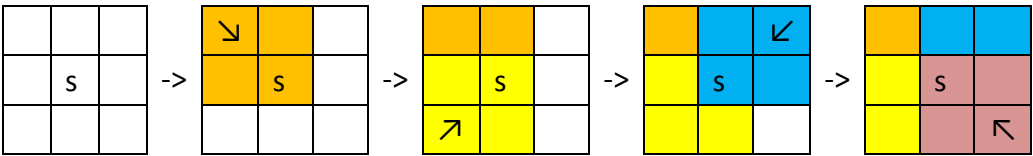The input ends when n and m = 0.

Output

For each test case, output the minimum number of table cloth is needed.

Sample

Input	Output
3 3 0 0 0 0 1 0 0 0 0 4 3 0 0 0 0 0 1 1 0 0 0 0 0 0 0	4 2

Explanation

First sample case, a possible solution, arrow indicate the starting corner grid:

Second sample case, a possible solution: