

Problem A. It's a Flow Problem

Time limit 2000 ms

Memory limit 256MB

Problem Description

Imagine you are a GOD, and you are frustrated with a school which always assigns you veryveryvery much homework. After deeeeeeply thinking, you decide to cast a rain spell to destroy the buildings with a downpour.

The school covers an area represented by an $n \times m$ grid, where each square (whose area is 1 m^2) has a corresponding height h_i . Every time you cast the spell, it costs some mana, but you can only flood a single square. However, because water is a liquid, it will automatically flow to neighboring squares in the East, West, South, and North directions, as long as the height of the neighboring squares is not higher than the current square.

Your water is infinite, meaning it will continue flowing until it cannot move to any adjacent squares. Your goal is to minimize the amount of mana used, i.e., minimize the number of times you need to cast the spell to completely flood the school.

Input format

The first line contains two integers n and m ($1 \leq n, m \leq 1000$), representing the number of length and width of the school, respectively.

The next n lines each contain m integers, representing the height h_i ($1 \leq h_i \leq 10000$) of each square.

Output format

Output a single integer, representing the minimum number of spell casts needed to completely flood the school.

Subtask score

Subtask	Score	Additional Constraints
1	40	$n = 1$
2	60	No constraints

Sample

Sample Input 1

```
3 6
3 9 1 6 2 4
6 9 6 4 1 10
10 1 8 6 2 6
```

Sample Output 1

```
5
```

Sample Input 2

```
5 4
5 9 1 4
8 5 10 8
8 9 6 8
1 5 2 1
7 8 10 2
```

Sample Output 2

```
4
```

Notes

The statement lacks any personal emotion.