

Wise And Miser

Jack is a wise and miser man. Always tries to save his money.

One day, he wants to go from city A to city B. Between A and B, there are N number of cities (including B and excluding A) and in each city there are M buses numbered from 1 to M. And the fare of each bus is different. Means for all N*M busses, fare (K) may be different or same. Now Jack has to go from city A to city B following these conditions:

1. At every city, he has to change the bus.
2. And he can switch to only those buses which have number either equal or 1 less or 1 greater to the previous.

You are to help Jack to go from A to B by spending the minimum amount of money.

N, M, K \leq 100.

Input

Line 1: N M

Line 2: N×M Grid

Each row lists the fares the M busses to go from the current city to the next city.

Output

Single Line containing the minimum amount of fare that Jack has to give.

Example

Input:

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5 5
1 3 1 2 6
10 2 5 4 15
10 9 6 7 1
2 7 1 5 3
8 2 6 1 9
```

Output:

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10
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Explanation

1 → 4 → 1 → 3 → 1: 10