

COCI '14 Contest 6 #5 Neo

Time limit: 0.5s **Memory limit:** 32M

Let us denote $A_{i,j}$ as the element from matrix A located in the i^{th} row and j^{th} column. We say that the matrix A is *cool* if this holds:

- $r, s > 1$
- $A_{1,1} + A_{r,s} \leq A_{1,s} + A_{r,1}$

where r denotes the number of rows, and s the number of columns of matrix A .

Additionally, we say that a matrix is *extremely cool* if each of its submatrices with at least two rows and two columns is cool.

It is your task to determine the largest number of elements that are contained in an extremely cool submatrix of the given matrix.

Input

The first line of input contains two integers R, S ($2 \leq R, S \leq 1\,000$) which represent the dimensions of the matrix.

Each of the following R lines contains S integers that represent the elements in the matrix. The elements in the matrix will be integers from the interval $[-10^6, 10^6]$.

Output

The first and only line of output must contain the maximal number of elements that are contained in an extremely cool submatrix of the matrix from the input. If an extremely cool submatrix doesn't exist, output 0 .

Scoring

In test cases worth 60% of total points, it will additionally hold $R, S \leq 350$.

Sample Input 1

```
3 3
1 4 10
5 2 6
11 1 3
```

Sample Output 1

9

Sample Input 2

```
3 3
1 3 1
2 1 2
1 1 1
```

Sample Output 2

4

Sample Input 3

```
5 6
1 1 4 0 3 3
4 4 9 7 11 13
-3 -1 4 2 8 11
1 5 9 5 9 10
4 8 10 5 8 8
```

Sample Output 3

15

Explanation for Sample Output 3

The solution is a matrix with an upper left corner in $(3, 2)$ and lower right corner in $(5, 6)$.