# Tile Covering

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|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 3 seconds |
| Memory limit: | 1024 megabytes |

There is a grid with $n$ rows and $m$ columns, where the rows are numbered from 1 to $n$ from top to bottom, and the columns are numbered from 1 to $m$ from left to right. The value of the cell in the $i$-th row and $j$-th column is $w_{i,j}$.

Now you can use any number (include zero) of tiles of size $1 \times k$ to cover this grid. The tiles can be rotated, and $k$ can be any positive integer, but cannot exceed the grid boundaries. Each tile can have a different $k$. When covering, make sure that these tiles do not overlap and do not have adjacent edges. Find the maximum sum of the values of the covered cells.

## Input

The first line contains two integers $n, m$ ($1 \leq n, m \leq 18$), representing the size of the grid.

For next $n$ lines, the $i$-th line contain $m$ integers $w_{i,1}, w_{i,2}, \ldots, w_{i,m}$ ($|w_{i,j}| \leq 10^6$), representing the values of the cells.

## Output

Output a single integer on a new line, representing the maximum sum of the values of the covered cells.

## Examples

| standard input | standard output |
|---|---|
| 2 2<br>2 1<br>1 1 | 3 |
| 4 4<br>-1 2 1 -2<br>3 2 0 -2<br>-3 -2 0 3<br>2 3 0 1 | 15 |