

Task: MOREFUN

Even more fun

CPSPC 2010, day 3.

24.06.2010

Available memory: 32 MB. Maximum running time: 2 s.

It's so nice to sleep under the sky and to be woken up by singing birds and the first rays of sun raising from the horizon. Wait, you don't remember going to sleep in the middle of the forest.

What you do remember is that you were covering something with three rectangles. Unsure about what it was, you decide to solve the following problem.

For a given matrix of integers, find k non-overlapping submatrices (in other words, rectangular fragments), such that the sum of numbers in them is as big as possible.

Input

The first line of the standard input contains three integers n , m and k ($1 \leq k \leq 3, k \leq n, m \leq 300$), denoting the height and width of the matrix and the number of submatrices respectively. The following n lines describe the matrix, row by row. Each of them contains a sequence of m integers a_{ij} ($-20\,000 \leq a_{ij} \leq 20\,000$).

Additionally, in test cases worth 40% of points, $1 \leq k \leq 2$.

Output

Output one integer to the standard output equal to the biggest possible sum of integers in k submatrices of the given matrix. The submatrices may touch, but they cannot have any common elements.

Example

For the input data:

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

the correct result is:

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6	-10	0	3	-6
-8	8	1	-5	3
-7	-3	2	4	-4
2	0	-1	3	-3