Problem 6: Battleship

Input File: *shipin.txt*
Output File: *shipout.txt*

Time limit	Memory limit
1 second	256 MB

Statement

Sheeta and Pazu are playing a game of air-battleship on an grid board with N rows and M columns. Pazu has 2 airships left. Each airship occupies a 1 by K or K by 1 rectangle within the grid, and airships do not overlap (even though air-battleship involves airships, it is still a very 2 dimensional game).

The coordinates (i, j) denote the square in the ith row and jth column, both of which are numbered from one. Based on Pazu's previous moves Sheeta has determined a strategic value for each square (i, j), denoted $A_{i,j}$, which is an non-negative integer.

Sheeta knows Pazu will position his ships such that the sum of the strategic values of the squares occupied by a ship are maximised. In this case, help Sheeta determine the maximum sum of strategic values of a valid ship placement. It is guaranteed that a valid placement exists.

Input

The first line of input contains 3 integers N M K. The next N lines each contain M integers, the jth integer on the ith row is $A_{i,j}$.

Output

Output 1 integer, the maximum strategic value sum.

Sample Input 1

```
4 4 2
6 1 2 1
5 1 4 3
0 5 1 6
9 0 6 6
```

Sample Output 1

```
23
```

Sample Input 2

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

Sample Output 2

```
34
```

Sample Input 3

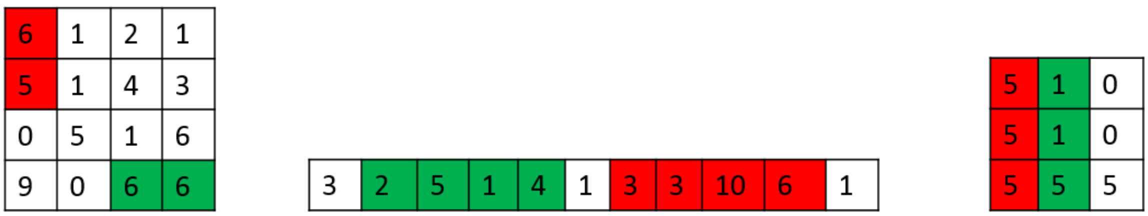
```
3 3 3
5 1 0
5 1 0
5 5 5
```

Sample Output 3

```
22
```

Explanation

Refer to below diagram for optimal placements. Red and green squares denote the two ship positions respectively. Note for Sample Input 3 that ships cannot overlap and must be contained within the grid.



Sample Input 1 Sample Input 2 Sample Input 3

Constraints

- $1 \leq N, M \leq 1000$ and $NM \geq 2$
- $1 \leq K \leq 1000$ and K is such that a valid battleship placement exists
- $0 \leq A_{i,j} \leq 10^6$ for all (i, j)

Subtasks

- For Subtask 1 (15 points), $N = 1$.
- For Subtask 2 (15 points), $N = M = K$.
- For Subtask 3 (15 points), $N, M \leq 30$.
- For Subtask 4 (15 points), $N, M \leq 80$.
- For Subtask 5 (15 points), $N, M \leq 200$.
- For Subtask 6 (25 points), no further constraints apply.