

# Art, Key, Texture

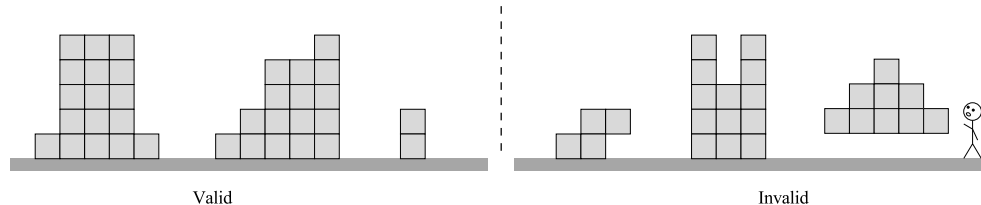
**Time and Memory Limits:** 1.5 seconds, 128 MB

You are Michelangelo, a budding artist in Renaissance Italy who has been employed by a wealthy noble to create the most beautiful sculpture in all the lands.

You begin with an upright marble slab which can be thought of as a  $H \times W$  grid of  $1 \times 1$  marble blocks. You then chisel away unnecessary parts of the slab until you are left with a beautiful sculpture consisting of zero or more blocks.

It is key that:

- Each level of the sculpture consists of a single connected row of blocks. Having separate disconnected sections on a level is far too post-cubist squarist.
- All of the blocks on each level must rest upon a block from the level below it. The bottom level must rest on the ground.



Unfortunately, your creative desires are stifled by commercial constraints: the noble you are making this sculpture for has a particular distaste for some of your slab's marble blocks (the textures are too "swirly", you're told), and a particular penchant for others ("Yes! I like those colours"). For each marble block you have a number – possibly negative – indicating how beautiful it is. Your task is to design a sculpture where the sum of these "beauty numbers" is as large as possible.

## Input

- The first line of input will contain two space-separated integers  $H$  and  $W$ , representing the height and width of the marble slab.
- The next  $H$  lines of input will each contain  $W$  integers representing the beauty numbers of the blocks in the slab.

## Output

Output should consist of a single integer: the largest possible sum of "beauty numbers" for your sculpture.

(continued over ...)

**Sample Input 1**

```
5 6
-99 1 -99 -99 1 -99
1 -99 1 1 -99 1
-99 1 -99 1 1 -99
1 1 -99 1 1 1
1 1 1 1 -99 1
```

**Sample Input 2**

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

**Sample Output 1**

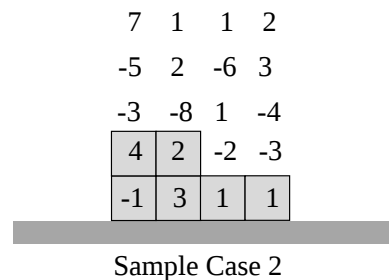
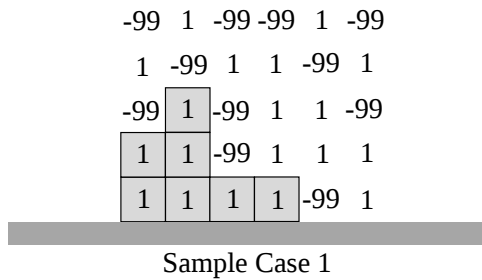
7

**Sample Output 2**

10

**Explanation**

Below are possible sculptures that maximise the sum of “beauty numbers” for each sample case above.



**Subtasks & Constraints**

For all subtasks,  $1 \leq H, W \leq 1,000$  and all “beauty numbers” are integers between  $-1,000,000$  and  $1,000,000$  inclusive.

- For Subtask 1 (30 points), all “beauty numbers” are either  $-1,000,000$  or  $1$ .
- For Subtask 2 (20 points),  $H \leq 100$  and  $W \leq 25$ .
- For Subtask 3 (25 points),  $H \leq 200$  and  $W \leq 200$ .
- For Subtask 4 (25 points), no further constraints apply.