Mushrooms

June 2023
C++ — 2 sec — 512 MB

Over the summer, Tina has decided she needs to get out more. Afterall, she can't spend her *entire* life playing games. Once a week, Tina takes a stroll through the shady Shadow Garden of Silhouettown. Afterall, she doesn't want to spend *too* much time in the sun.

In the shade of the umbrella-like allerbmu trees, mushrooms are sprouting up all over the garden. Some have brown gills, others have orange tops, and Tina wants to pick them.

To make the foraging more fun, Tina has divided the garden into an **n** by **m** grid. Each cell contains a number, **i**, representing the number of mushrooms they contain. Some cells cannot be entered as they contain a towering tree. These cells have the number -1.

2	-1	8	1
4	0	3	4
5	-1	3	-1
3	0	2	0

The entrance of the garden is at the top-left of the grid. Tina wants to walk to the bottom-right of the garden and back again, collecting mushrooms as she goes. When moving to the bottom-right, Tina will only move right or down. When moving to the top-left, Tina will only move up or left. Tina wants to know the maximum number of mushrooms she can collect in her walk around the garden.

Note that once a cell has had its mushrooms harvested, it cannot be harvested again.

INPUT You will be given two integers, **n** and **m**, denoting the width and height of the garden, respectively. This will be followed by **m** lines of **n** integers, **i**, denoting the number of mushrooms in each cell (or -1 if the cell contains an impassable allerbmu tree).

$1 \leq \mathbf{n}, \mathbf{m} \leq 250$
$-1 \leq \mathbf{i} \leq 1000$

OUTPUT Output a single integer, the maximum number of mushrooms that Tina can gather in her trip from the top-left corner to the bottom-right corner and back again. If it is impossible for Tina to complete her trip, output -1.

SAMPLE For example, consider the garden shown above. Tina cannot enter the cells containing the allerbmu trees (-1). Starting at the top-left, she can move down, down, down, right, right, right, reaching the bottom-right. Tina can harvest 16 mushrooms by taking this route. On her way back again, she can move left, up, up, left, left, up. This allows Tina to harvest a further 6 mushrooms, giving her 22 mushrooms in total. This is the maximum number of mushrooms that Tina can harvest.

INPUT	OUTPUT
3 3 3 -1 9 4 5 2 3 5 1	23
6 5 8 8 8 2 2 1 1 1 8 1 2 8 8 2 8 2 1 1 1 1 8 1 1 2 2 1 8 8 8 8	105
4 2 2 0 -1 4 4 -1 1 0	-1