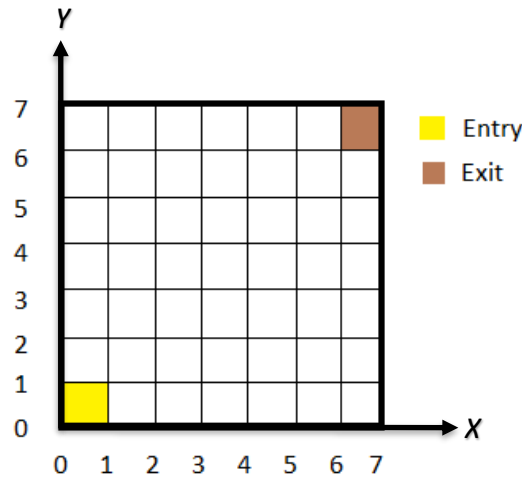# 30 Maze
23 points

Introduction
Calculate the shortest path from the entry square to the exit square in a given maze of size DimX x DimY. The entry will be in the bottom left of the maze and the exit in the upper right of maze. The movements along the maze can be one square up, down, right or left.

In this example it is shown a maze of 7 x 7

RESTRICTIONS:
DimX > 1
DimY > 1
N ≥ 0
$0 \leq OX_n, DX_n \leq DimX$
$0 \leq OY_n, DY_n \leq DimY$

Input
For each test, the first line will be DimX, number of columns of the maze.
The second line will be DimY, number of rows of the maze.
The third line will be N, number of walls in the maze.
The next N lines will be "OXn, OYn, DXn, DYn", the coordinates of the origin and the destiny of the wall n.

Output
The output must one line. It will contain the distance from the entry to the exit. In case it is impossible to reach the exit the output will be -1.
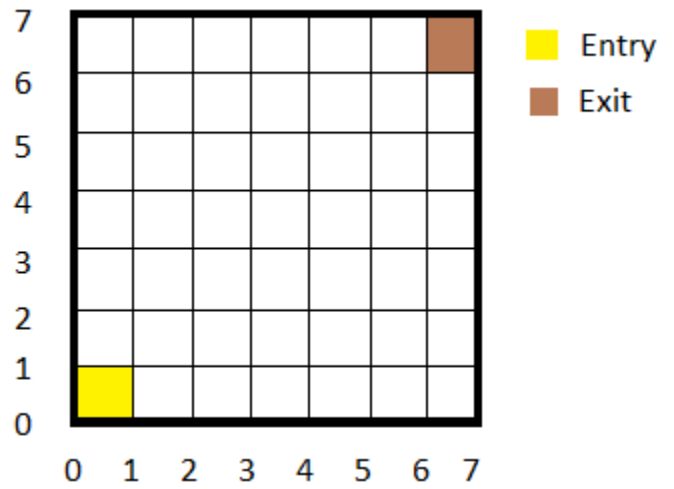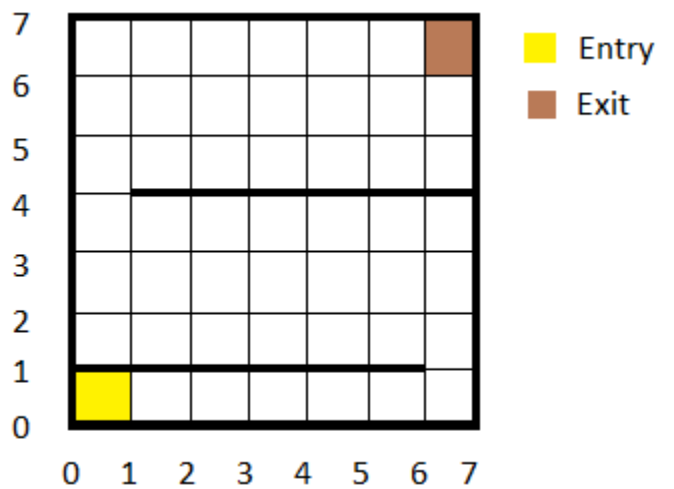
Example 1

Input
7
7
0

Output
12

Example 2

Input
7
7
2
0,1,6,1
1,4,7,4

Output
24

Example 3

Input
7
7
2
0,2,3,2
3,2,3,0

Output
-1