14 The Battle Royal Game
9 points

Introduction

You work in the development of a new battle royal game.

The players will fight each other inside a fixed map size, but every 10 minutes the size of the map gets reduced and any player outside the limits will lose the game.

You have been requested to develop a small prototype to check how the map limits will work.
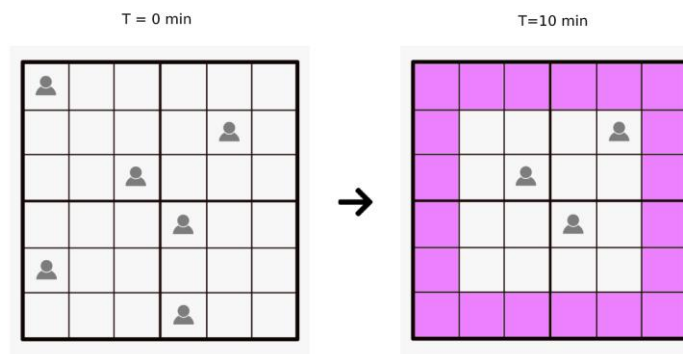
> HINT:
>
> The map is defined NxN
>
> The valid player's positions go from 0 to N-1
>
> Note that the map gets reduced by all sides! (top, bottom, right, left) and that players do not move from their positions

Here's an example.

Input

The input will be:

- The size of the map given as maximum rows and columns (only squares are valid 3x3,4x4,5x5 etc).

- The match time in minutes in which we want to evaluate the number of players remaining.

- Several positions on the map, representing the player's position at the beginning of the match. (T=0 min)

The process should stop reading player's position when the program finds the character '#'.

4 4

15

1 2

3 3

#

In this example the first line describes that this is a 4x4 map.

The second line refers to 15 minutes from the start of the match.

The third line provides the position of a player on row 1 and column 2.

At the fourth line another player position is set on row 3 and column 3.

Finally the character '#' marks stop reading input file.

Output

The output will be the number of players that remain in the match at that specific point in time.

Example 1

Input

4 4

15

1 2

3 3

#

Output

1

Example 2

Input

8 8

25

3 4

2 1

5 5

#

Output

2