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# G - Big Banned Grid

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 575 points

## Problem Statement

There is an  $H \times W$  grid. Let  $(i, j)$  denote the cell at the  $i$ -th row ( $1 \leq i \leq H$ ) from the top and  $j$ -th column ( $1 \leq j \leq W$ ) from the left.

Each cell in the grid either has an obstacle placed on it or has nothing placed on it. There are  $K$  cells with obstacles: cells  $(r_1, c_1), (r_2, c_2), \dots, (r_K, c_K)$ .

Takahashi is initially at cell  $(1, 1)$  and wants to reach cell  $(H, W)$  by repeatedly moving to an adjacent cell (up, down, left, right) that has nothing placed on it.

More precisely, he can repeat the following operation as many times as he likes:

- Choose one of the following four operations and perform the chosen operation:
  - If  $1 < i$  and cell  $(i - 1, j)$  has nothing placed on it, move to cell  $(i - 1, j)$ . Otherwise, do not move.
  - If  $1 < j$  and cell  $(i, j - 1)$  has nothing placed on it, move to cell  $(i, j - 1)$ . Otherwise, do not move.
  - If  $i < H$  and cell  $(i + 1, j)$  has nothing placed on it, move to cell  $(i + 1, j)$ . Otherwise, do not move.
  - If  $j < W$  and cell  $(i, j + 1)$  has nothing placed on it, move to cell  $(i, j + 1)$ . Otherwise, do not move.

Determine whether he can move from cell  $(1, 1)$  to cell  $(H, W)$ .

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05:26:46 +11:00

# Constraints

- $1 \leq H \leq 2 \times 10^5$
- $1 \leq W \leq 2 \times 10^5$
- $0 \leq K \leq 2 \times 10^5$
- $1 \leq r_i \leq H$  ( $1 \leq i \leq K$ )
- $1 \leq c_i \leq W$  ( $1 \leq i \leq K$ )
- $(r_i, c_i) \neq (1, 1)$  ( $1 \leq i \leq K$ )
- $(r_i, c_i) \neq (H, W)$  ( $1 \leq i \leq K$ )
- $(r_i, c_i) \neq (r_j, c_j)$  ( $1 \leq i < j \leq K$ )
- All input values are integers.

# Input

The input is given from standard input in the following format:

```
H W K
r1 c1
r2 c2
⋮
rK cK
```

# Output

If Takahashi can move from cell  $(1, 1)$  to cell  $(H, W)$  by repeating the operation described in the problem, print Yes; otherwise, print No.

## Sample Input 1

Copy

```
4 5 5
1 4
2 3
3 2
3 4
4 2
```

Copy

## Sample Output 1

Copy

No

Copy

The grid looks as follows:

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S			X	
		X		
	X		X	
	X			G

Takahashi cannot move from cell (1, 1) to cell (4, 5).

### Sample Input 2

Copy

2 7 3  
1 2  
2 4  
1 6

Copy

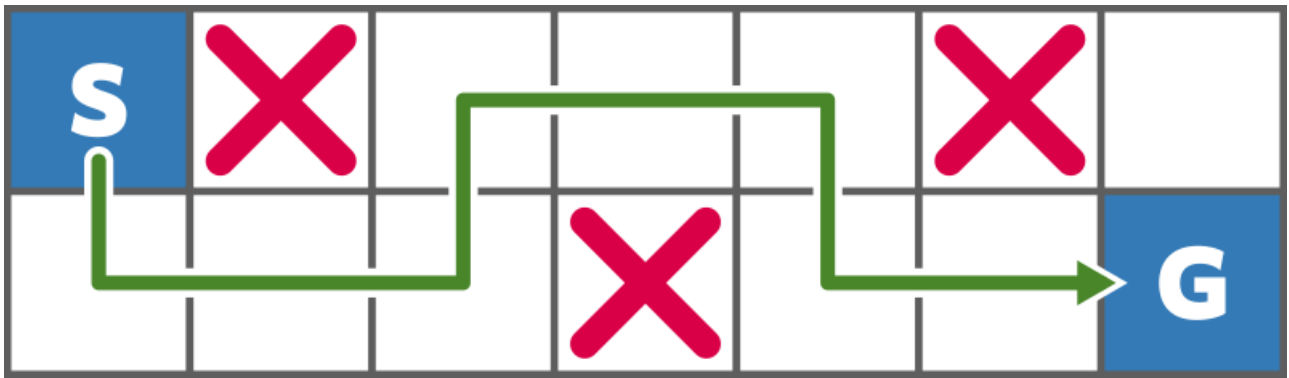
### Sample Output 2

Copy

Yes

Copy

The grid looks as follows:



He can move from cell  $(1, 1)$  to cell  $(2, 7)$  by moving as shown in the figure.

### Sample Input 3

Copy

1 1 0

Copy

### Sample Output 3

Copy

Yes

Copy

Note that there may be cases where he does not need to move or where no obstacles are placed.

### Sample Input 4

Copy

```
10 12 20
8 3
1 11
6 4
3 7
10 4
5 7
4 7
5 5
4 3
6 1
1 6
2 7
6 7
1 3
6 3
2 12
9 6
7 3
3 11
9 7
```

Copy

## Sample Output 4

Copy

Yes

Copy

'#telegram)

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc413%2Ftasks%2Fabc413\_g%3Flang%3Den&title=G%20-

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