

# Connect

Your task is to decide if a specified sequence of moves in the board game Connect ends with a winning move.

\epsfbox{p3381.eps}

In this version of the game, different board sizes may be specified. Pegs are placed on a board at integer coordinates in the range  $[0, N]$ . Players Black and White use pegs of their own color. Black always starts and then alternates with White, placing a peg at one unoccupied position  $(x, y)$ . Black's endzones are where  $x$  equals 0 or  $N$ , and White's endzones are where  $y$  equals 0 or  $N$ . Neither player may place a peg in the other player's endzones. After each play, the latest position is connected by a segment to every position with a peg of the same color that is a chess knight's move away (2 away in one coordinate and 1 away in the other), provided that a new segment will touch no segment already added, except at an endpoint. Play stops after a winning move, which is when a player's segments complete a connected path between the player's endzones.

For example, Figure 1 shows a board with  $N = 4$  after the moves  $(0,2)$ ,  $(2,4)$ , and  $(4,2)$ . Figure 2 adds the next move  $(3,2)$ . Figure 3a shows a poor next move of Black to  $(2,3)$ . Figure 3b shows an alternate move for Black to  $(2,1)$  which would win the game.

Figure 4 shows the board with  $N = 7$  after Black wins in 11 moves:

$(0, 3), (6, 5), (3, 2), (5, 7), (7, 2), (4, 4), (5, 3), (5, 2), (4, 5), (4, 0), (2, 4)$

## Input

The input contains from 1 to 20 datasets followed by a line containing only two zeroes, '0 0'. The first line of each dataset contains the maximum coordinate  $N$  ( $3 < N < 21$ ) and the number of total moves,  $M$  ( $4 < M < 250$ ), with  $M$  odd, so Black will always be the last player. The dataset ends with one or more lines each containing two or more coordinate pairs, with a total of  $M$  coordinate pairs. All numbers on any line will be separated by blanks. All data will be legal. There will never be a winning move before the last move.

## Output

The output contains one line for each data set: 'yes' if the last move is a winning move and 'no' otherwise.

## Example

### Input:

```
4 5
0 2 2 4 4 2 3 2 2 3
4 5
0 2 2 4 4 2 3 2 2 1
7 11
0 3 6 5 3 2 5 7 7 2 4 4
5 3 5 2 4 5 4 0 2 4
0 0
```

### Output:

```
no
yes
yes
```

