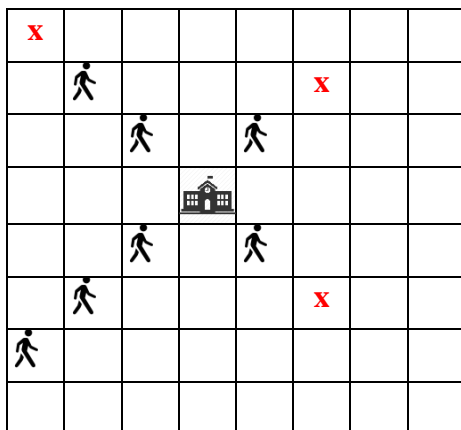


## G. TONTON AND THE STORM

Time limit: 1s | Memory limit: 512MB  
Input stream: stdin | Output stream: stdout

Transportation system of Tonton kingdom can be represented as a matrix of size  $n \times n$ . There are  $n$  rows,  $n$  columns from top to bottom, left to right respectively starting at 1. Cell located at row  $i$  and column  $j$  is denoted as  $(i, j)$ . Storm Mãng cụt is approaching Tonton Kingdom, it is raining cats and dogs all day. Today, little Bella has finished at school and is going back to home. Her school is located at cell  $(x_s, y_s)$ , Bella's house is located at cell  $(x_f, y_f)$ . Transportation system of Tonton kingdom is so strange. You are only able to move to cells on diagonal lines. Formally, you can move from cell  $(x, y)$  to cells  $(x + i, y + i), (x + i, y - i), (x - i, y + i), (x - i, y - i) \forall i \in N$  with 1 unit of time as long as these destination cells are inside the matrix.

At the moment, there are  $m$  falled trees which are at cells  $(x_1, y_1), (x_2, y_2), \dots, (x_m, y_m)$ , and blocks you going through these cells. You guys please help Bella figure out the fastest time to her home as she starts crying now.



The transportation system of Tonton Kingdom

### Input

- The first line contains two integers  $n, m$  ( $1 \leq n \leq 5000, 0 \leq m \leq 10^5$ )
- The second line contains four integers  $x_s, y_s, x_f, y_f$  ( $1 \leq x_s, y_s, x_f, y_f \leq n$ )
- The next  $m$  lines, each line contains two integers  $x_i, y_i$  ( $1 \leq x_i, y_i \leq n$ ).

### Output

- Print exactly one integer – the fastest time Bella can go to her house. If Bella can't return her home, print -1 instead.

### Sample

Input	Output
8 1 1 1 4 4 3 3	4