# D. Volcanoes

Iahub got lost in a very big desert. The desert can be represented as a $n \times n$ square matrix, where each cell is a zone of the desert. The cell $(i, j)$ represents the cell at row $i$ and column $j$ $(1 \leq i, j \leq n)$. Iahub can go from one cell $(i, j)$ only down or right, that is to cells $(i + 1, j)$ or $(i, j + 1)$.

Also, there are $m$ cells that are occupied by volcanoes, which Iahub cannot enter.

Iahub is initially at cell $(1, 1)$ and he needs to travel to cell $(n, n)$. Knowing that Iahub needs $1$ second to travel from one cell to another, find the minimum time in which he can arrive in cell $(n, n)$.

## Input
The first line contains two integers $n$ $(1 \leq n \leq 10^9)$ and $m$ $(1 \leq m \leq 10^5)$. Each of the next $m$ lines contains a pair of integers, $x$ and $y$ $(1 \leq x, y \leq n)$, representing the coordinates of the volcanoes.

Consider matrix rows are numbered from 1 to $n$ from top to bottom, and matrix columns are numbered from 1 to $n$ from left to right. There is no volcano in cell $(1, 1)$. No two volcanoes occupy the same location.

## Output
Print one integer, the minimum time in which Iahub can arrive at cell $(n, n)$. If no solution exists (there is no path to the final cell), print -1.

## Examples

### input
```
4 2
1 3
1 4
```
### output
```
6
```

### input
```
7 8
1 6
2 6
3 5
3 6
4 3
5 1
5 2
5 3
```
### output
```
12
```

### input
```
2 2
1 2
2 1
```
### output
```
-1
```

**Note**

Consider the first sample. A possible road is: $(1, 1) \rightarrow (1, 2) \rightarrow (2, 2) \rightarrow (2, 3) \rightarrow (3, 3) \rightarrow (3, 4) \rightarrow (4, 4)$.