

Contest Duration: 2025-12-13(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251213T2100&p1=248>) - 2025-12-14(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251213T2240&p1=248>) (local time) (100 minutes)

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C - 2x2 Placing

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 300 points

Problem Statement

There is a grid with N rows and N columns. Let (i, j) denote the cell at the i -th row from the top and j -th column from the left. Initially, nothing is placed on the grid.

You will now perform M operations. The i -th operation ($1 \leq i \leq M$) is as follows:

- Place a block that occupies a 2×2 region with cell (R_i, C_i) as the top-left corner on the grid if and only if its position does not overlap with any other blocks already placed. More precisely, for the set of cells $S = \{(R_i, C_i), (R_i + 1, C_i), (R_i, C_i + 1), (R_i + 1, C_i + 1)\}$, if there exists a block already placed on the grid that occupies any cell in S , do nothing; otherwise, place a block that occupies all four cells in S .

After performing all operations, find how many blocks are placed on the grid.

Constraints

- $2 \leq N \leq 10^9$
- $1 \leq M \leq 2 \times 10^5$
- $1 \leq R_i, C_i \leq N - 1$
- All input values are integers.

Input

The input is given from Standard Input in the following format:

```
 $N$   $M$   
 $R_1$   $C_1$   
 $R_2$   $C_2$   
 $\vdots$   
 $R_M$   $C_M$ 
```

Output

Print the answer.

Sample Input 1

[Copy](#)

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

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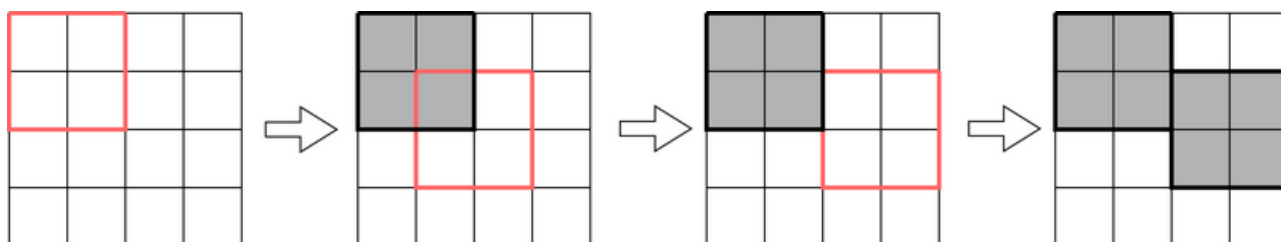
Sample Output 1

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```
2
```

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The following diagram shows the operations, where black-filled regions represent blocks and red-framed regions represent where the next block is to be placed.



- Operation 1: Nothing is placed in the 2×2 region with cell $(1, 1)$ as the top-left corner, so place a block there.
- Operation 2: Among the 2×2 region with cell $(2, 2)$ as the top-left corner, there is already another block on cell $(2, 2)$, so do nothing.
- Operation 3: Nothing is placed in the 2×2 region with cell $(2, 3)$ as the top-left corner, so place a block there.

Thus, after performing all operations, two blocks are placed on the grid.

Sample Input 2

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```
1000000000 4
1 1
1 101
101 1
101 101
```

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Sample Output 2

[Copy](#)

```
4
```

[Copy](#)

Blocks can be placed in all operations.

Sample Input 3

[Copy](#)

```
8 10
6 5
7 3
6 7
3 4
4 2
3 7
1 3
7 4
6 1
6 1
```

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Sample Output 3

[Copy](#)

```
8
```

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There may exist i, j ($i \neq j$) such that $(R_i, C_i) = (R_j, C_j)$.

[/#telegram](#))

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2026-01-02 (Fri)
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