

Contest Duration: 2025-12-06(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251206T2100&p1=248>) - 2025-12-07(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251206T2240&p1=248>) (local time) (100 minutes)

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E - Cover query

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 450 points

Problem Statement

There are N cells arranged in a row from left to right.

The i -th cell from the left ($1 \leq i \leq N$) is called cell i .

Initially, all cells are painted white.

Process Q queries in order.

The i -th query ($1 \leq i \leq Q$) is as follows:

Two integers (L_i, R_i) ($1 \leq L_i \leq R_i \leq N$) are given.

Paint all cells $L_i, L_i + 1, \dots, R_i$ black.

Here, cells that were painted white are now painted black, and cells that were painted black remain as is.

After that, find the number of cells (among the N cells) that are painted **white**.

Constraints

- $1 \leq N \leq 10^9$
- $1 \leq Q \leq 2 \times 10^5$
- $1 \leq L_i \leq R_i \leq N$
- All input values are integers.

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Input

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

```
 $N$   $Q$   
 $L_1$   $R_1$   
 $L_2$   $R_2$   
 $\vdots$   
 $L_Q$   $R_Q$ 
```

Output

Output Q lines.

The i -th line ($1 \leq i \leq Q$) should contain the answer to the i -th query.

Sample Input 1

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```
10 5  
3 5  
8 9  
5 8  
2 9  
6 6
```

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Sample Output 1

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```
7  
5  
3  
2  
2
```

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Initially, 10 cells are arranged in a row from left to right.

- The first query paints cells 3, 4, 5 black. After the operation, the cells painted white are cells 1, 2, 6, 7, 8, 9, 10, which is 7 cells.
- The second query paints cells 8, 9 black. After the operation, the cells painted white are 1, 2, 6, 7, 10, which is 5 cells.
- The third query paints cells 5, 6, 7, 8 black. After the operation, the cells painted white are 1, 2, 10, which is 3 cells.
- The fourth query paints cells 2, 3, ..., 9 black. After the operation, the cells painted white are 1, 10, which is 2 cells.

- The fifth query paints cell 6 black. After the operation, the cells painted white are cells 1, 10, which is 2 cells.

Thus, output 7, 5, 3, 2, 2 in this order on each line.

Sample Input 2

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```
1000000000 1
1 500000000
```

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Sample Output 2

[Copy](#)

```
500000000
```

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