

Contest Duration: 2025-11-29(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251129T2100&p1=248>) - 2025-11-30(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251129T2240&p1=248>) (local time) (100 minutes)

iso=20251129T2100&p1=248) - 2025-11-30(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251129T2240&p1=248>) (local time) (100 minutes)

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## D - Clouds

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 425 points

### Problem Statement

The sky is represented by a  $2000 \times 2000$  grid.

When looking up at the sky, the cell at the  $r$ -th row from the top and  $c$ -th column from the left is called  $(r, c)$ .

Currently, there are clouds  $1, 2, \dots, N$  floating in this sky.

The cell  $(r, c)$  is covered by cloud  $i$  if and only if it satisfies  $U_i \leq r \leq D_i$  and  $L_i \leq c \leq R_i$ .

.

For  $k = 1, 2, \dots, N$ , answer the following question:

- Remove only cloud  $k$  from the  $N$  clouds. At this point, there are  $N - 1$  clouds floating in the sky. How many cells are not covered by any cloud?

### Constraints

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq U_i \leq D_i \leq 2000$
- $1 \leq L_i \leq R_i \leq 2000$
- All input values are integers.

2026-01-02 (Fri)

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## Input

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

```
 $N$   
 $U_1 \ D_1 \ L_1 \ R_1$   
 $U_2 \ D_2 \ L_2 \ R_2$   
 $\vdots$   
 $U_N \ D_N \ L_N \ R_N$ 
```

## Output

Output  $N$  lines.

The  $i$ -th line should contain the answer to the question when  $k = i$ .

### Sample Input 1

[Copy](#)

```
5  
2 4 1 4  
3 3 3 5  
1 3 4 6  
4 5 3 5  
5 5 4 6
```

[Copy](#)

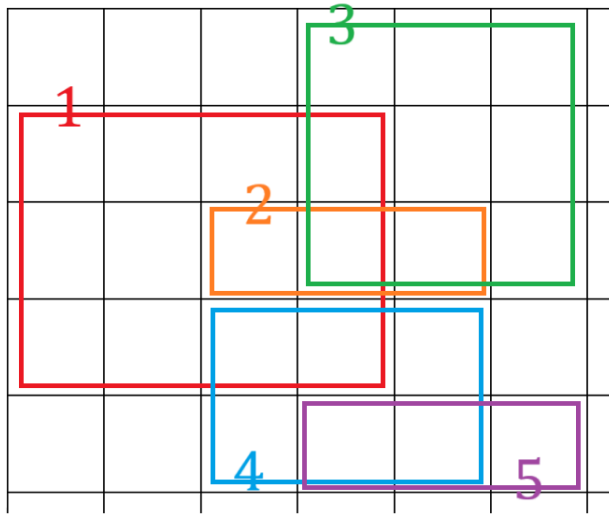
### Sample Output 1

[Copy](#)

```
3999983  
3999976  
3999982  
3999978  
3999977
```

[Copy](#)

The figure shows the top-left  $5 \times 6$  region of the sky.



- When cloud 1 is removed, the number of cells covered by some cloud is 17, so the number of cells not covered by any cloud is 3999983.
- When cloud 2 is removed, the number of cells covered by some cloud is 24, so the number of cells not covered by any cloud is 3999976.
- When cloud 3 is removed, the number of cells covered by some cloud is 18, so the number of cells not covered by any cloud is 3999982.
- When cloud 4 is removed, the number of cells covered by some cloud is 22, so the number of cells not covered by any cloud is 3999978.
- When cloud 5 is removed, the number of cells covered by some cloud is 23, so the number of cells not covered by any cloud is 3999977.

#telegram)

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