

Problem F

What a Colorful Wall

Time limit: 3 seconds

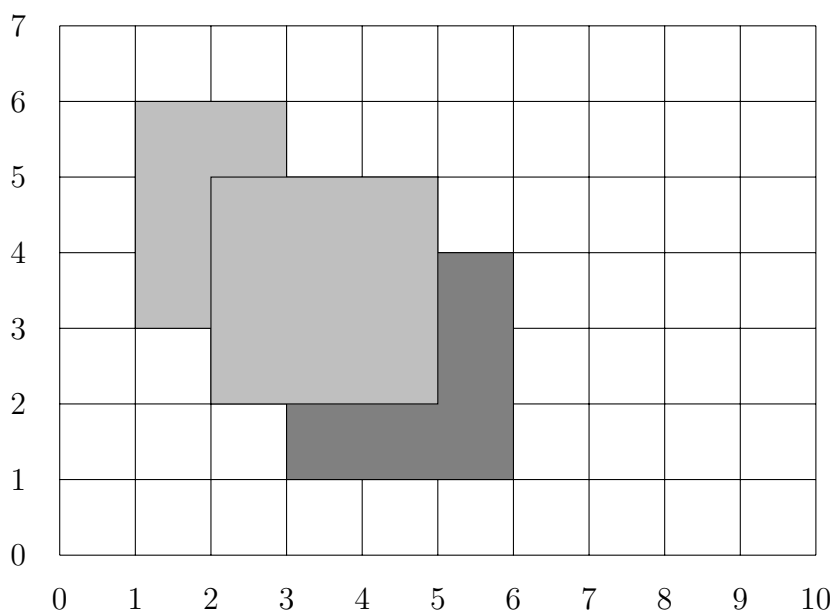
Memory limit: 1024 megabytes

Problem Description

In a lovely park, where you can see trees of green and red roses under skies of blue and clouds of white, there is a wall public for everybody to put up posters. The color of a poster is indicated by a number. If a new poster to put up overlaps with older ones, the overlapping area will be covered by the new one. Given n posters with their coordinates and color, please help to put up them on the wall in the given order and figure out the number of distinct colors that can be seen on the resultant wall. At the beginning, the wall is blank. All the posters are rectangles and cannot be rotated.

For example, the figure shows three posters being put up on the wall in the following order.

1. A light gray poster with a left-top and a right-bottom coordinates of (1, 6) and (3, 3), respectively. The color is numbered 1.
2. A dark gray poster with a left-top and a right-bottom coordinates of (3, 4) and (6, 1), respectively. The color is numbered 2.
3. A light gray poster with a left-top and a right-bottom coordinates of (2, 5) and (5, 2), respectively. The color is numbered 1.



On the resultant wall, two colors, i.e. light gray and dark gray, are visible.

Input Format

Each test case begins with a line showing an integer n denoting the number of posters. Each of the following n lines specifies a poster by five integers, x_1 , y_1 , x_2 , y_2 , and c , where (x_1, y_1)

denotes the coordinate of the left-top corner of the poster, (x_2, y_2) denotes the coordinate of the right-bottom corner of the poster, and c is the color of the poster. Please help to put up these n posters on the wall in their given order.

Output Format

For each case, print a single integer that is the number of distinct colors visible on the resultant wall.

Technical Specification

- $1 \leq n \leq 4000$
- $0 \leq x_1 < x_2 < 2^{28}$, $0 \leq y_2 < y_1 < 2^{28}$, $1 \leq c \leq n$, for every poster

Sample Input 1

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

Sample Output 1

```
2
```

Sample Input 2

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

Sample Output 2

```
2
```

Sample Input 3

```
3
0 1 2 0 1
0 1 1 0 2
2 1 3 0 2
```

Sample Output 3

```
2
```