2182 Tri-Colored Intersections

There are N, $1 \leq N \leq 1,000$, rectangles in the 2-D xy-plane, each rectangle is associated with exactly one of the three colors: RED, BLUE or GREEN. The four sides of a rectangle are horizontal or vertical line segments. Rectangles are defined by their lower-left and upper-right corner points. Each corner point is a pair of two non-negative integers in the range of 0 through 50,000 indicating its x and y coordinates. We say that the intersection area of rectangles is *tri-colored* if there are at least one RED, one BLUE and one GREEN rectangles covering this intersection area of these rectangles.

Example: Consider the following three rectangles and their colors: rectangle 1: $< (0,0)\ (4,4)\ RED >$, rectangle 2: $< (1,1)\ (5,2)\ BLUE >$, rectangle 3: $< (1,1)\ (2,5)\ GREEN >$. The tri-colored intersection rectangle is at (1,1) (2,2) with an area of 1.

Input

The input consist of multiple test cases. A line of 5 '`-1`'s separates each test case. An extra line of 5 '`-1`'s marks the end of the input. In each test case, the rectangles are given one by one in a line. In each line for a rectangle, 5 non-negative integers are given. The first two are the x and y coordinates of the lower-left corner. The next two are the x and y coordinates of the lower-left corner. The last integer indicates the color of the rectangle with '`1`' means RED, '`2`' means BLUE and '`3`' means GREEN.

Output

For each test case, output the total tri-colored intersection area in a line.

Sample Input

```
0 0 4 4 1
1 1 5 2 2
1 1 2 5 3
-1 -1 -1 -1 -1
0 0 2 2 1
1 1 3 3 2
2 2 4 4 3
-1 -1 -1 -1 -1
-1 -1 -1 -1 -1
```

Sample Output

```
1
0
```