The 25th Annual

ACM International Collegiate Programming Contest ASIA Regional - Taejon

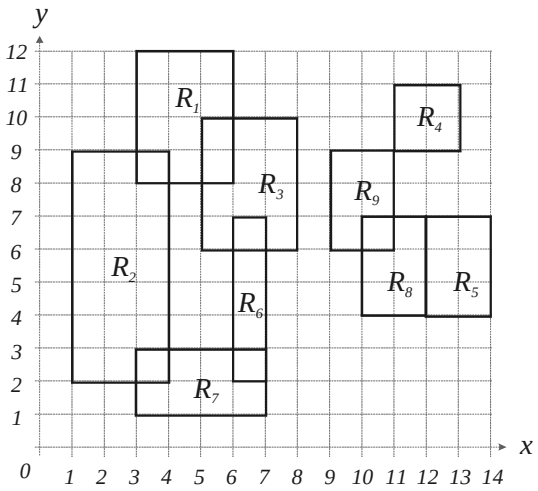
Problem D

Rectangle Coloring

Input: rect.in

You are given n axis-parallel rectangles on a plane. Here, an axis -parallel rectangle is a rectangle whose edges are parallel to either x-axis or y-axis. You are to find the number of colors to paint the given n rectangles according to the following rules:

1. Each rectangle has to be painted with one color.
2. A pair of intersecting rectangles must have the same color. Two rectangles are intersecting if their intersection is not empty when we regard a rectangle as a set of points including the boundary.
3. A rectangle R_a must have the same color as R_b if there is a sequence of rectangles $R_a = R_{i_1}, R_{i_2}, \ldots, R_{i_k} = R_b$ such that R_{i_j} and $R_{i_{j+1}}$ are intersecting for all $1 \le j < k$; otherwise, they must have different colors. For instance, rectangle R_9 in the following figure must have the same color as R_4, R_5, R_8, and have a different color from R_1, R_2, R_3, R_6, R_7.



Input

The input consists of T test cases. The number of test cases (T) is given in the first line of the input file. Each test case begins with a line containing an integer N, $1 \le N \le 200$, that represents the number of rectangles in the test case. Each of the following N lines contains four positive integers x_1, y_1, x_2, and y_2, $1 \le x_1, y_1, x_2, y_2 \le 10000$, representing a rectangle. (x_1, y_1) and (x_2, y_2) are the (x, y)-coordinates of the lower-left and upper-right corners of the rectangle, respectively. The four integers are delimited by one or more spaces. From the $N+3$-th line, the remaining test cases are listed in the same manner as above.

Output

The output should contain the number of colors, one per line.

Sample Input	Output for the Sample Input
2 9 3 8 6 12 1 2 4 9 5 6 8 10 11 9 13 11 12 4 14 7 6 2 7 7 3 1 7 3 10 4 12 7 9 6 11 9 4 11 9 13 11 12 4 14 7 10 4 12 7 9 6 11 9	2 1