Fundamental Computer Programming- C++ Lab(I)

Lab 7: Intersection of Two Rectangles

Week 7, Fall 2020

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Problem Description

Given two rectangles R1 and R2, determine whether R1 and R2 intersect or not. If they intersect, find out the number of R1's vertices which are inside R2 or on the edges of R2 as well as the number of R2's vertices which are inside R1 or on the edges of R1.

Input Format

The first line gives the number of test cases, then followed by the data for each test case. Each test case takes a line which contains in sequence the coordinates of bottom-left vertex of R1, the coordinates of top-right vertex of R1, the coordinates of bottom-left vertex of R2, and the coordinates of top-right vertex of R2. The coordinates of a vertex are specified by two integers. The first integer is X coordinate and the second integer is Y coordinate. Integers are representable in 32 bits and separated by whitespaces.

Output Format

The output for a test case takes a line. If the two given rectangles intersect, the line first contains a "yes" and then followed by two numbers. The first is the number of R1's vertices inside R2 or on the edges of R2. The second is the number of R2's vertices inside R1 or on the edges of R1. If the two given rectangles do not intersect, the output line for this case contains only a "no".

Example

Sample Input	Sample Output
28 0 0 1 1 1 1 2 2 -3 -3 3 3 -1 -1 1 1	yes 1 1 yes 0 4 yes 0 0

0 0 10 10 1 -2 5 12	yes 0 0
0 0 10 10 -1 2 12 5	yes 0 0
-1 2 12 5 0 0 10 10	yes 0 2
0 0 10 10 3 3 7 12	yes 2 0
3 3 7 12 0 0 10 10	no
-1 -1 4 4 5 6 8 9	no
5 6 8 9 -1 -1 4 4	yes 1 1
1 1 10 10 5 5 13 13	yes 1 1
1 1 10 10 -1 5 5 13	yes 1 1
-1 5 5 13 1 1 10 10	yes 1 1
0 0 1 1 -3 -3 0 0	yes 1 1
0 0 1 1 1 -5 3 0	yes 1 1
0 0 1 1 -3 1 0 5	yes 4 0
-1 -1 1 1 -100 -120 100 120	no
-1 -1 1 1 3 4 1001 10002	yes 0 2
-120 -120 500 1200 500 1 1200 3	yes 2 1
0 0 1 1 1 0 2 2	yes 1 2
1 0 2 2 0 0 1 1	yes 2 2
0 0 10 10 0 0 20 5	yes 4 2
0 0 10 10 0 0 20 10	yes 2 4
0 0 20 10 0 0 10 10	yes 4 4
0 0 1 1 0 0 1 1	no
0 0 100 3 -100 -100 5 -10	no
0 0 1 1001 -100 -100 -10 43	yes 4 1
0 0 1 1 0 0 2 2	yes 1 4
0 0 2 2 0 0 1 1	