Competitive Programming SS24

Submit until end of contest

Problem: tritri (1.0 second timelimit)

Note: This is a problem that is harder to solve than usual. Solve the other problems first before spending too much time on this one.

You are given two triangles. Check whether they have a common *interior* point.

Input The input starts with an integer t ($1 \leq t \leq 10000$), the number of test cases.

Each test case consists of two lines, each of which describes a triangle. Each triangle is represented by 6 integers $x_1, y_1, x_2, y_2, x_3, y_3$ and has vertices (x_1, y_1), (x_2, y_2) and (x_3, y_3). All triangles will have non-zero area, and there is a blank line before each test case.

Output For each test case print one line containing `yes` if the two triangles have a common interior point, and `no` otherwise.

Sample input

```
9

0 0 1 0 0 1
0 0 1 0 0 1

0 0 2 0 0 2
1 0 1 1 0 1

0 0 3 0 0 3
2 -1 2 2 -1 2

0 0 1 0 0 1
0 0 0 1 -1 0

0 0 1 0 0 1
0 0 2 0 0 1

0 0 4 0 0 4
1 1 2 1 1 2

0 0 3 0 0 3
1 1 3 1 1 3

0 0 2 0 0 2
1 1 2 1 1 2

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

Sample output

```
yes
yes
yes
no
yes
yes
yes
no
no
```

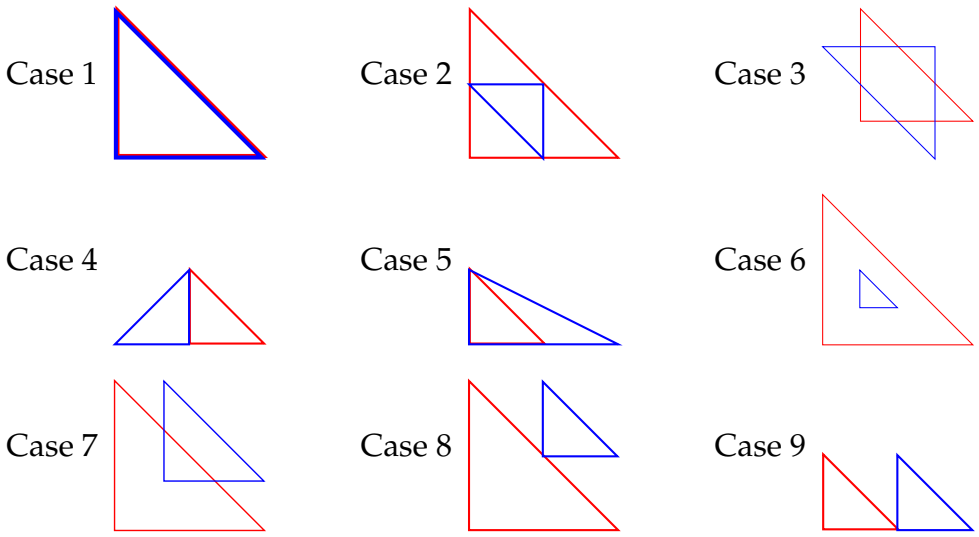

Figure 1: In a fit of inexplicable generosity we created extensive sample test cases (with pictures even!) that tame this vicious beast of an exercise by dragging most sneaky cases that would otherwise hide in the darkest corners of inputspace into plain sight. We *should* have let you fail and despair instead, so you can fully experience this marvellous exercise by the sweat of your brow. But we must have grown soft. Don't get used to it.