(Adv.) Competitive Programming

Submit until end of contest, via the judge interface

HPI Hasso Plattner Institut
Digital Engineering · Universität Potsdam

Problem: dropping (1 second timelimit)

Amazon is testing its delivering of packages via drones. Therefore every consumer places a convex polygon as a landing zone in their backyard. The drone flies above that zone and drops the package (which can also be some random convex polygon). Mostly the drone hits the landing zone, but sometimes the package is off (its already off if some corner hits the border of the landing zone). To evaluate this delivery technique, please identify for a given set of drops if the packages is fully inside the landing zone or if it is off.

Input The input starts with one line containing the number of testcases t ($t \leq 10000$). Afterwards t testcases follows, each consisting of two input lines. The first line contains 8 numbers (we assume, that all polygons consists of 4 corner points but they are not rectangular), the coordinates of the landing zone. The second line also contains 8 numbers, the coordinates of the packages after hitting on the ground. All coordinates are in clockwise order starting at the bottom left corner and all numbers are smaller than 10^9

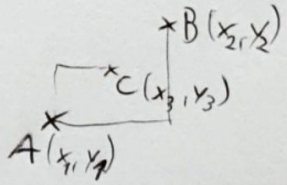
Output Please print for each testcase if the second polygon is fully inside of the first one. If this is true, print `IN` otherwise print `NOT IN`.

Sample input

```
3
0 0 0 2 3 3 3 1
1 1 1 2 2 2 2 1
0 0 0 2 3 3 3 4
1 5 1 6 2 6 2 5
0 0 0 2 3 3 3 4
2 2 2 4 4 4 4 2
```

Sample output

```
IN
NOT IN
NOT IN
```



```
5
26 42 20 72 58 68 52 38
1 1 2 19 17 18 19 2
4 2 4 18 16 17 19 3
42 2 40 17 58 19 57 2
35 0 37 38 61 38 59 2
10 21 10 53 42 53 42 19
21 0 23 34 49 32 55 2
32 4 30 19 47 18 43 6
2 0 8 32 38 36 34 2
10 2 10 15 24 15 25 3
```

```
NOT IN
NOT IN
NOT IN
IN
IN
```