# Problem D

The Art Gallery

Input: standard input

Output: standard output

Century Arts has hundreds of art galleries scattered all around the country and you are hired to write a program that determines whether any of the galleries has a *critical point*. The galleries are polygonal in shape and a *critical point* is a point inside that polygon from where the entire gallery is not visible.

For example, in gallery 1 (drawn below) point *A* is a critical point, but gallery 2 has no critical point at all.
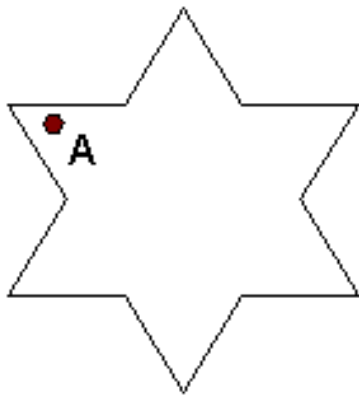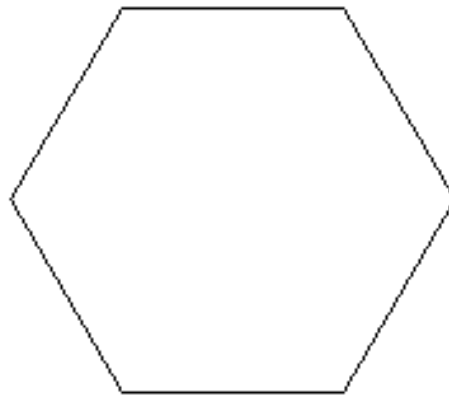
Gallery 1   Gallery 2

The *Century Arts* authorities will provide you with the shape of a gallery as a sequence of (*x*, *y*) co-ordinates (determined using a suitable origin) of the consecutive corner points of that gallery.

Input

The input file consists of several data blocks. Each data block describes one gallery.

The first line of a data block contains an integer *N* (3 £ *N* £ 50) indicating the number of corner points of the gallery. Each of the next *N* lines contains two integers giving the (*x*, *y*) co-ordinates of a corner point where 0 £ *x*, *y* £ 1000. Starting from the first point given in the input the corner points occur in the same order on the boundary of the gallery as they appear in the input. No three consecutive points are co-linear.

The input file terminates with a value of 0 for *N*.

Output

For each gallery in the input output the word "*Yes"* if the gallery contains a critical point, otherwise output the word "*No"*. Each output must be on a separate line.

Sample Input

```
4
0  0
3  0
3  3
0  3
4
0  0
3  0
1  1
0  3
0
```

Sample Output

```
No
Yes
```

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