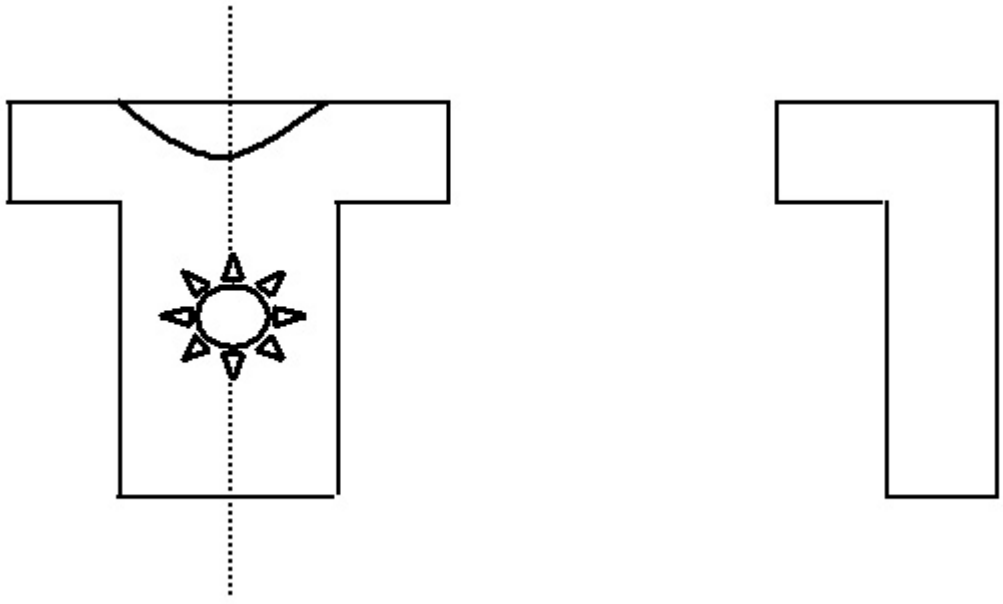
I have a T-Shirt. When I don't wear it any more, I fold it up. For most of the time, I can find a line so that the parts of the T-shirt on both sides are symmetrical. Then, I can fold it along that line. But sadly, I cannot find such a line for some strange (really really strange, see sample input `^_^`) T-shirts.



In the example above, I can fold the T-shirt along the dash line, then, I got the figure on the right. Could you tell me if I can succeed?

Input

The first line of the input contains a single integer t ($t \leq 20$) indicating the number of test cases. Each test case begins with a line containing a single integer n ($3 \leq n \leq 100$) indicating the number of points of the polygon. In the next n lines each contain a pair of integers (x_i, y_i), indicating the position of the points. The points are given in the counter-clockwise order. The T-Shirt is valid. i.e not self-crossing. But the T-Shirt maybe not convex.

Output

For each test case, output a line corresponding the answer. Answer '`Yes`' if the T-Shirt can be folded, '`No`' otherwise.

Sample Input

```
2
3
0 0
5 0
1 1
8
1 0
2 0
2 1
-2 1
-2 0
-1 0
-1 -3
1 -3
```

Sample Output

```
No
Yes
```