

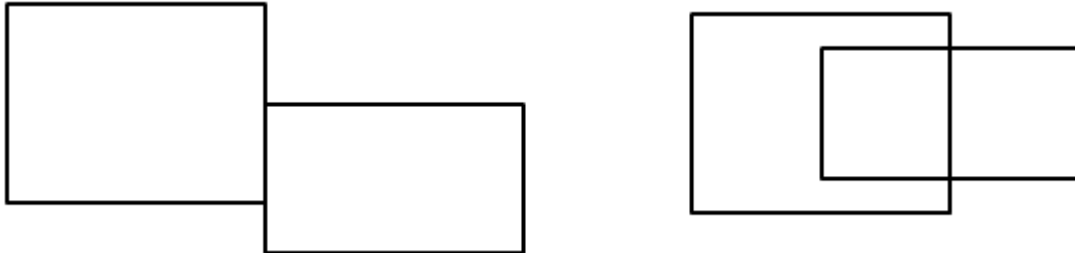
# C

## Common Area

**Input:** Standard Input  
**Output:** Standard Output



Given two simple polygons, your task is to determine whether they have a non-empty common area. Note that the two rectangles in figure (a) share a segment, but no common area at all.



By "simple polygon", we mean the polygons will not be self-intersecting or self-touching, and will not have duplicated vertices or adjacent collinear segments.

Note: be sure to test your program with many special cases.

### Input

There will be at most 100 test cases. Each test case contains two lines, one for each polygon. Each polygon begins with an integer  $n$  ( $3 \leq n \leq 100$ ), the number of vertices, then  $n$  pairs of integers  $(x,y)$  ( $-1000 \leq x,y \leq 1000$ ), the vertices of the polygon, in counter-clockwise order.

### Output

For each test case, print the case number and one of "Yes" or "No".

### Sample Input

```
4 0 0 2 0 2 2 0 2
4 2 0 4 0 4 2 2 2
4 0 0 2 0 2 2 0 2
4 1 0 3 0 3 2 1 2
```

### Output for Sample Input

```
Case 1: No
Case 2: Yes
```

Problemsetter: Rujia Liu, Special Thanks: Md. Mahbubul Hasan, Md. Shiplu Hawlader, Feng Chen