

Concave Polygon

You are given the cartesian coordinates of a set of points in a **2D** plane (in no particular order). Each of these points is a corner point of some Polygon, P , which is not self-intersecting in nature. Can you determine whether or not P is a [concave polygon](#)?

Input Format

The first line contains an integer, N , denoting the number of points.

The N subsequent lines each contain **2** space-separated integers denoting the respective x and y coordinates of a point.

Constraints

- $3 \leq N \leq 1000$
- $0 \leq x, y \leq 1000$

Output Format

Print **YES** if P is a concave polygon; otherwise, print **NO**.

Sample Input

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

Sample Output

```
NO
```

Explanation

The given polygon is a square, and each of its **4** internal angles are **90°**. As none of these are over **180°**, the polygon is *not* concave and we print **NO**.

Scoring

The percentage score awarded for your submission will be:

```
100 - 2*(percentage of tests which you solve incorrectly)
```

If this value is negative, the percentage score for your submission will be 0.

So if you get half or more of the tests incorrect, your score will be a zero.