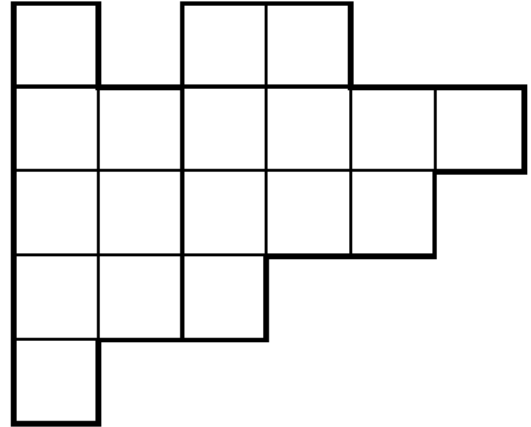


## 3320 Well-formed Polygon

We are given a set of orthogonal line segments (i.e., ones that are parallel to either the  $x$ - or the  $y$ -axis).

The endpoints are defined on a unit grid. We would like to know if these form a simple polygon, that is, the given set of line segments forms a single (No part of the border is covered more than once.) border around a connected (It is possible to draw a curve from any point inside the polygon to any other point inside the polygon without crossing a border.), non-zero area.

For example:



### Input

Each line segment set specification will start with a line having a single integer,  $n$  ( $0 \leq n \leq 1000$ ), being the number of line segments in the set. This will be followed by  $n$  lines, each having 4 integer values in the range  $-100$  to  $+100$ , being respectively the  $x$ - and  $y$ - coordinate of one endpoint, followed by respectively the  $x$ - and  $y$ -coordinate of the other endpoint. The line segments are parallel to an axis, and have non-zero length. There will never be more than two lines having the same endpoint. The final line segment set will have  $n = 0$ , and should not be processed.

### Output

For each line segment set, there should be an output line of the form:

Set  $n$  outlines a simple polygon

or

Set  $n$  does not outline a simple polygon

where  $n$  is the number of the set (starting at 1).

### Sample Input

```

4
2 5 4 5
2 5 2 6
2 6 4 6
4 6 4 5
4
2 5 5 5
2 5 2 6
2 6 4 6
4 6 4 5
4
2 5 3 5
2 5 2 6
2 6 4 6

```

```
4 6 4 5
7
1 -1 1 1
4 -1 2 -1
1 1 3 1
3 1 3 0
3 0 4 0
4 -1 4 0
2 -1 1 -1
6
0 2 1 2
1 2 1 0
1 0 2 0
2 1 2 0
0 1 0 2
2 1 0 1
0
```

### Sample Output

```
Set 1 outlines a simple polygon
Set 2 does not outline a simple polygon
Set 3 does not outline a simple polygon
Set 4 outlines a simple polygon
Set 5 does not outline a simple polygon
```