

# The "Simple" Problem

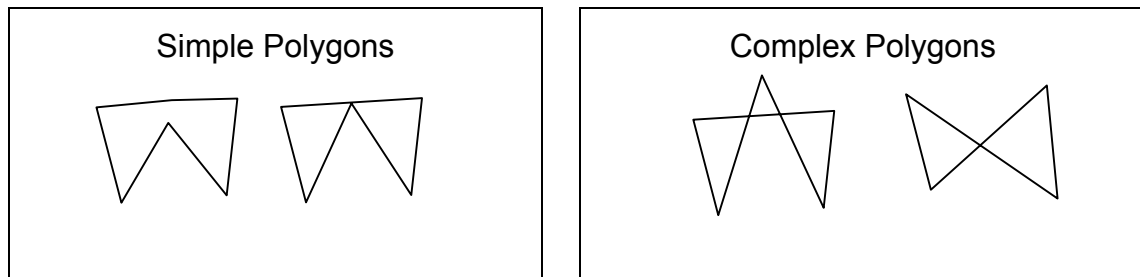
input file: simple.in

output file: simple.out

## Introduction

A (planar) polygon can be described by the closed sequence of vertices around the polygon. The vertices themselves are described by their  $x$ - and  $y$ -coordinates. Algorithms that fill planar polygons need to know whether the polygon is simple or complex, hence the motivation for this problem. A simple polygon is one where no two line segments, representing two edges of the polygon, intersect at points other than any of their end-points. If a polygon is not simple, it is complex.

The following examples illustrate simple and complex polygons.



## Problem Description

You are to write a program that determines whether each of a given list of polygons is complex or simple.

## Input

The input will consist of lines containing two space-separated integers in the range of  $-100$  to  $+100$  representing the  $x$ - and  $y$ -coordinates of a vertex. A vertex duplicating the first one in the current polygon represents the closing of the current polygon. There will be at least three edges and at most 100 edges in any given polygon. The next vertex, unless it is  $0\ 0$ , is the beginning of the next polygon. The list is terminated by a dummy vertex,  $0\ 0$ .

Of course there can be no polygon vertices at the origin using this scheme! You may assume that there will be no coincident vertices within a given polygon, and that no polygon will contain any overlapping edges.

## Output

For each polygon, you will print `COMPLEX` or `SIMPLE` on a separate line.

### Sample Input

```
1 0
3 -14
5 1
1 0
1 1
3 4
11 1
13 2
1 1
1 -1
3 1
3 0
2 0
2 -1
1 -1
0 0
```

### Sample Output (Corresponding To Sample Input)

```
SIMPLE
COMPLEX
SIMPLE
```