British Informatics Olympiad Final

1–3 April, 2005

Sponsored by Lionhead Studios

Marathon

Once every year the peaceful existence of that small knot of villages known as The Endians is disturbed by a marathon. A large number of villagers participate and, for the benefit of outsiders who may come to spectate, each participant wears a shirt with an identifying number on the back. The shirts are used for a variety of other events throughout the year and are reversible — they can be worn inside-out since each shirt has numbers embroidered on both the inside and the outside.

Given the numbers on each shirt, determine whether it is possible to wear them in such a way that all the marathon runners have different numbers on their backs.

The input will consist of a sequence of lines, each containing two integers, the i^{th} line giving the two numbers on the i^{th} shirt. Each number will be between 1 and 1000000 (inclusive), and the number of shirts will be between 1 and 1000000 (inclusive). The input will be terminated by the line `-1 -1`.

If it is possible to wear each shirt so that different numbers have been picked for all the shirts, you should output a list of the selected numbers. The i^{th} line of your output should contain a single integer, indicating the number chosen for the i^{th} shirt. If you do not believe there is a solution you should just output `Impossible`.

Sample Input

```
1 2
2 4
4 4
-1 -1
```

Sample Output

```
1
2
4
```