CCC '07 S3 - Friends

Canadian Computing Competition: 2007 Stage 1, Senior #3

In a certain school, it has been decided that students are spending too much time studying and not enough time socializing. To address this situation, it has been decided to give every student a friend. Friendship is one-way. That is, if Janet is assigned to be Sarah's friend, Janet must be friendly to Sarah, but Sarah is not required to reciprocate.

The assignment of friends is done by computer using student numbers. Every student is assigned exactly one friend. Sometimes, a 'circle of friends' occurs. For example, if Marc is assigned Fred, Fred is assigned Lori, Lori is assigned Jean, and Jean assigned Marc, we have a circle of 4 friends containing Marc, Fred, Lori, and Jean. In the circle, we can say that Marc has a separation of 0 from Fred, of 1 from Lori, of 2 from Jean, and of 3 from Marc.

Your task is to identify, given the computer assignment of friends, whether two students are in the same circle of friends, and if so, determine their separation.

Input Specification

Input begins with a single integer n ($2 \leq n \leq 9\,999$), on a line by itself, indicating the number of students in the class. The next n lines contain the computer assignment of friendship. An assignment is of the form `x y` (where $1 \leq x, y \leq 9999, x \neq y$). For example, `1234 8765` is a possible friendship assignment indicating that student `1234` must be friends with student `8765`.

Following the friendship assignments, there are a series of lines containing two student numbers, separated by a single whitespace. These lines represent the pairs of students that you will determine if they are in same circle of friends and, if so, their separation. The last line of input can be identified by the use of the `0 0` as the friend assignment.

Output Specification

For each case, you are to print, on a separate line, either `Yes` or `No` depending on whether they are in the same circle of friends. If the answer is `Yes`, follow the output Yes with a single whitespace and then an integer indicating the friend's separation.

Sample Input

```
6
1 2
2 3
3 1
10 11
100 10
11 100
1 100
2 3
0 0
```

Output for Sample Input

```
No
Yes 0
```