Problem M. Connectivity Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	1024 megabytes

Captain Jack occupies n islands. He wants to build a kingdom in the n islands. He names each island with an index i, $1 \leq i \leq n$. At the beginning, there was no bridge between any two islands. However, Jack wants to inspect any two islands p and q by car. When Jack cannot travel from island p to island q, he will build a bridge between islands p and q. Given two island indices p and q, please write a program to help Jack to see whether he can travel from p to q. For example, at first Jack wants to travel from island 2 to island 3, but there is no bridge between them. Then the program must output "N" because he cannot travel from island 2 to island 3 by car. After that, Jack decides to build a bridge between island 2 and island 3. Next, Jack wants to travel from island 3 to island 4, but there is still no bridge connecting island 4 to any other islands that are connected to island 3. So your program must output "N". Next, Jack wants to travel from island 2 to island 4, your program will output "Y" because there is a bridge between islands 2 and 3 and there is a bridge between 3 and 4. In Table 2, we give an example of this process.

Table 2: Connectivity example

Input p q	Output	Previous pairs imply that p is connected to q
2 3	N	Build a bridge between island 2 and island 3
3 4	N	Build a bridge between island 3 and island 4
2 4	Y	There is a bridge between islands 2 and 3 and there is a bridge between 3 and 4.

Input

The first line of input is an integer n, $1 \leq n \leq 10000$, denoting the number of times that Jack travels between two islands. The following n lines contains two integers p and q separated with a space indicating that Jack wants to travel from island p to island q where $0 \leq p, q < 1000$.

Constraints

- $1 \leq n \leq 10000$
- $0 \leq p, q < 1000$, and $p \neq q$.

Output

For each test case, output one line containing "Y" or "N" which indicates whether Jack can travel from island p to island q or not.

Examples

standard input	standard output
12 3 4 4 9 8 1 2 3 5 6 2 9 5 9 7 3 4 8 5 6 1 8 6 1	N N N N N Y N N N Y Y Y