
Bob and His Nephews

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 128 megabytes

Problem logic: Tasmeem Reza

Task arranged by Ahnaf Shahriar Asif

Bob has n nephews. They are numbered from 1 to n . He doesn't really know their exact ages, but he does know which one is older between any two of his nephews (you may assume none of them are of the same age). He will give you a hint about their ages in m steps. In each step, you will be given 2 numbers: u and v , which means u is older than v . You want to prove that Bob is a liar. So after each step, you have to output if there really exists a situation where all hints Bob has given you so far are true.

Input

The first line contains 2 space-separated integers: n and m . Next m lines contain 2 space-separated integers: u and v which means u is older than v .

Output

You have to print m lines. In the m -th line, you have to print "Yes" if it is possible that all the hints Bob has given you till the m -th step are true, otherwise print "No".

Scoring

subtask 1 (7 Points): $2 \leq n \leq 8$ and $1 \leq m \leq 20$

subtask 2 (12 Points): $2 \leq n \leq 100$ and $1 \leq m \leq 1000$

subtask 3 (20 Points): $2 \leq n \leq 1000$ and $1 \leq m \leq 100$

subtask 4 (8 Points): $2 \leq n \leq 10^5$ and $1 \leq m \leq 10^5$ and "No" will appear atmost once in the output.

subtask 5 (53 Points): $2 \leq n \leq 10^5$ and $1 \leq m \leq 5 \times 10^5$

Example

standard input	standard output
4 5	Yes
1 2	Yes
2 3	No
3 1	No
4 3	No
1 4	

Note

Sample Explanation: It is definitely possible that the first 2 hints are true (eg. 1's age is 13, 2's age is 7, 3's age is 5). However, output for the third hint should be "No" since there is no way to be 1 older than 2, 2 older than 3 and 3 older than 1 simultaneously.

You can print "Yes" or "YES" or "yes" etc. Your output will be case insensitive. You'll not get wrong answer just for printing yes/no incorrectly