F. Bipartite Checking

time limit per test: 6 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph consisting of n vertices. Initially there are no edges in the graph. Also you are given q queries, each query either adds one undirected edge to the graph or removes it. After each query you have to check if the resulting graph is bipartite (that is, you can paint all vertices of the graph into two colors so that there is no edge connecting two vertices of the same color).

Input

The first line contains two integers n and q ($2 \le n, q \le 100000$).

Then q lines follow. ith line contains two numbers x_i and y_i ($1 \le x_i < y_i \le n$). These numbers describe ith query: if there is an edge between vertices x_i and y_i, then remove it, otherwise add it.

Output

Print q lines. ith line must contain `YES` if the graph is bipartite after ith query, and `NO` otherwise.

Example

input
3 5 2 3 1 3 1 2 1 2 1 2

output
YES YES NO YES NO