

Problem A

You are given a sequence of edges to add to a graph. You should only add the edge if the resulting graph is bipartite.

Input and output

The first line contains a single integer n ($1 \leq n \leq 10^5$), the number of vertices of the graph. On each of the following (at most 10^6) lines, there is a pair of distinct integers u and v ($1 \leq u, v \leq n$). If the current graph together with the edge uv is bipartite, add the edge uv to the graph and write out “YES”. Otherwise do not add the edge and write out “NO”. An edge can be added multiple times, i.e., the pairs $\{u, v\}$ are not guaranteed to be distinct.

Example

Input:

```
5
1 2
1 3
2 3
1 3
```

Output:

```
YES
YES
NO
YES
```