

Bipartite Check

time limit per test: 1 second (2 seconds for Python)
memory limit per test: 500 megabytes
input: standard input
output: standard output
points: 100 · problem code: bipartitecheck

You are given an undirected graph with n vertices and m edges. The graph may be disconnected.

Determine whether every connected component can be colored using two colors so that every edge joins two vertices of different colors.

Input

The first line contains two integers n and m .

The next m lines each contain two integers a and b , meaning there is an undirected edge between vertices a and b .

Vertices are numbered from 1 to n .

Output

Print **YES** if the graph is bipartite. Otherwise, print **NO**.

Constraints

- $1 \leq n \leq 200000$
- $0 \leq m \leq 300000$
- $1 \leq a, b \leq n$

Example 1

Input

```
4 4
1 2
2 3
3 4
4 1
```

Output

```
YES
```

Explanation

The graph is a cycle of even length, so alternating the two colors around the cycle works.

Example 2

Input

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

Output

```
NO
```

Explanation

The graph is a triangle, so two adjacent vertices must eventually receive the same color.