

Bipartite Graph

A bipartite graph is a graph that does not contain any odd-length cycles and whose vertices can be divided into two disjoint and independent sets U and V such that every edge connects a vertex in U to one in V . Given an array of undirected graph nodes, print "Yes" if the graph is bipartite and "No" otherwise.

You are required to solve it using a graph and a stack.

Input Format

The first line contains two integers N and E , where N is the number of vertices and E is the number of edges in the graph.

Each of the next E lines contains two integers a and b representing that there is an edge between vertices a and b .

Constraints

- $0 \leq N, E \leq 10^4$
- $0 \leq \text{number} \leq 10^4$

Output Format

Print "Yes" or "No".

Sample Input 0

```
5 5
1 2
1 3
3 4
4 5
2 5
```

Sample Output 0

```
No
```

Explanation 0

```
  1
 /  \
3    2
 \   /
  4 -- 5
```

Sample Input 1

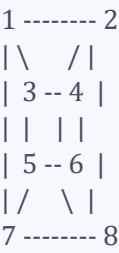
```
8 11
1 2
1 3
1 7
2 4
```

2 8
3 4
3 5
5 6
4 6
5 7
6 8

Sample Output 1

Yes

Explanation 1



Two sets: {1, 4, 5, 8} and {2, 3, 6, 7}