

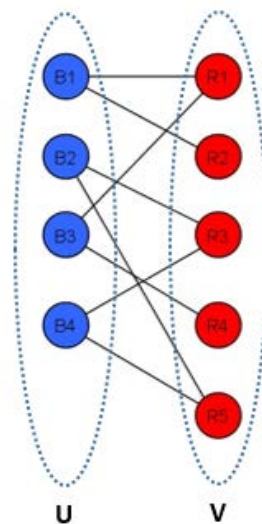
32 Two-colorable graphs

22 points

Introduction

In the mathematical field of graph theory, a bipartite graph (or bigraph) is a graph whose vertices can be divided into two disjoint sets U and V (that is, U and V are each independent sets) such that every edge connects a vertex in U to one in V .

The two sets U and V may be thought of as a coloring of the graph with two colors: if one colors all nodes in U **blue**, and all nodes in V **red**, each edge has endpoints of differing colors, as is required in the graph coloring problem. In contrast, such a coloring is impossible in the case of a non-bipartite graph, such as a triangle: after one node is colored **blue** and another **red**, the third vertex of the triangle is connected to vertices of both colors, preventing it from being assigned either color.



We want you to create a program that checks whether a non-directed graph is bipartite or not. This means that it is possible to paint all his vertices only with two colors in such a way that there are no neighbor vertices with the same color.

Input

The input to your program will consist of more than one test case. Each test case will receive the number of vertices n and the number of edges m , followed of m pairs x, y indicating an edge between x and y . Assume that $1 \leq n \leq 10^4$, $0 \leq m \leq 5n$, that vertices are numbered between 0 and $n-1$, $x \neq y$, and that there is only one edge between x and y .

```
2 1
0 1
```

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



Output

For each test case, write the word **yes** if the graph is bipartite, **no** otherwise. The output of the previous example should be:

yes
no

