



## Tree Mirroring

Let  $T$  be a rooted tree (a connected undirected acyclic graph), and let  $S$  be a perfect copy of  $T$ . Construct a new graph by taking the union of  $T$  and  $S$ , and merging the corresponding leaf nodes (but never the root). We call such a graph a *tree-mirrored graph*.

Write a program that determines if an arbitrary undirected connected graph is a tree-mirrored graph.

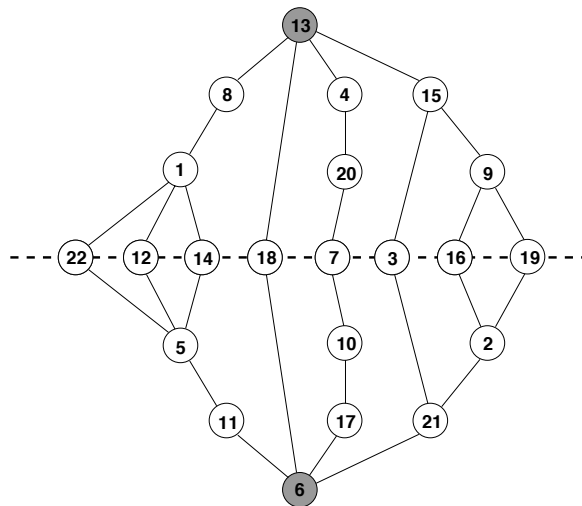


Figure 1: An example of a tree-mirrored graph. The figure corresponds to the third example test case.

### Input

The first line of input contains two integers  $N$  and  $M$ , the number of vertices and edges of a graph  $G$ . The vertices in  $G$  are labeled from 1 to  $N$ . The following  $M$  lines describe the edges. Each such line contains two integers  $x$  and  $y$  ( $x \neq y; 1 \leq x, y \leq N$ ), describing one edge. There will be at most one edge between any pair of vertices.

### Output

The first and only line of output should contain the string YES if the graph  $G$  is a tree-mirrored graph, and NO otherwise.

### Constraints

$$3 \leq N, M \leq 100\,000$$

In test cases worth 60 points,  $3 \leq N, M \leq 3\,500$ . In test cases worth 30 points,  $3 \leq N, M \leq 300$ .

**Examples**

| Input   | Output |
|---|--------|
| 7 7<br>1 2<br>2 3<br>3 4<br>4 5<br>5 6<br>6 7<br>7 1  | NO     |
| 6 6<br>1 2<br>2 3<br>2 4<br>3 5<br>4 5<br>5 6   | YES    |
| 22 28<br>13 8<br>8 1<br>1 22<br>1 12<br>1 14<br>13 18<br>13 4<br>4 20<br>20 7<br>13 15<br>15 3<br>15 9<br>9 16<br>9 19<br>22 5<br>12 5<br>14 5<br>5 11<br>11 6<br>18 6<br>7 10<br>10 17<br>17 6<br>3 21<br>21 6<br>16 2<br>19 2<br>2 21 | YES    |

The last example input corresponds to the graph in the figure.