A graph is called *planar* if it can be drawn in the plane without any crossings. In a drawing of a graph, nodes are identified with points in the plane, and edges with lines connecting the corresponding end nodes. No edge is allowed to cross another edge or node in the drawing.

Recall that Kuratowski's theorem provides an easy test for determining planarity: A graph is planar if and only if it is not homeomorphic to any graph that contains the subgraph $K_{3,3}$ or the subgraph K_5.

The figure on the left depicts $K_{3,3}$ and the one on the right K_5:
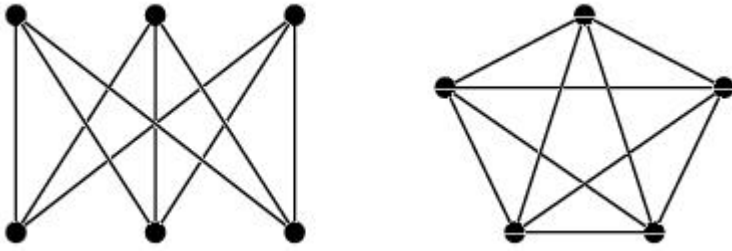
The simplest graph homeomorphic to a given one can be obtained by repeating the following procedure while possible:

- Remove a vertex of degree 1 and its incident edge.

- Remove a vertex v of degree 2 and its two incident edges, and replace them by a new edge that joins the two nodes adjacent to v. For instance,
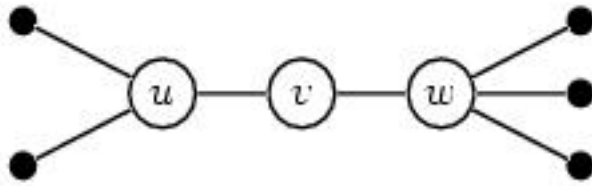
would be reduced to

Note that if edge $\{u, w\}$ was already in the graph, it would not be added again.

Write a program that determines whether a given undirected graph is planar or not.

Input

Input consists of zero or more test cases. Each test case consists of a graph.

A graph is given in the following way: First, a line contains two integers n and m, where n denotes the number of vertices of the graph, and m denotes its number of edges ($1 \leq n \leq 20$ and $0 \leq m$). Then follow m lines, one for every edge of the graph, each containing two integers u and v (with $u \neq v$) meaning that the graph contains the edge $\{u, v\}$. Vertices in the graph are labelled from 1 to n. There are not repeated edges.

Output

For each test case, print a line with the string 'YES' if the graph is planar or with the string 'NO' otherwise.

Sample Input

```
7 10
    5 7
    7 4
    3 1
    5 1
    2 4
    2 1
    2 6
    5 6
    3 4
    3 6
4 6
    1 2
    1 3
    1 4
    2 3
    3 4
    2 4
```

Sample Output

```
NO
YES
```