Is it cyclic? P45234_en

Write a program that, given a directed graph, determines whether the graph has any cycle or not.

Input

Input consists of several cases. Every case begins with the number of vertices n and the number of arcs m of a graph G. Follow m pairs u, v, indicating that there is an arc $u \to v$ in G, with $u \neq v$. Assume $1 \leq n \leq 10^4$, $0 \leq m \leq 5n$, and that for every pair of vertices u and v there is at most one arc of the kind $u \to v$. Vertices are numbered from 0 to $n - 1$.

Output

For every case, print "yes" or "no" depending on whether the graph has any cycle or not.

Sample input

```
3 2
0  1
1  2

3 3
0  1
1  2
2  0

4 5
2  3
1  3
3  0
0  2
0  1

5 6
0  1
0  2
0  3
1  3
2  3
4  1
```

Sample output

```
no
yes
yes
no
```

Problem information

Author : Enric Rodríguez
Translator : Enric Rodríguez
Generation : 2024-06-18 15:24:14