
Is it cyclic?

X64801_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 . Follow m pairs u, v , indicating that there is an arc $u \rightarrow v$, where $u \neq v$. 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 $u \rightarrow v$. 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

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