

Directed Cycle Detection

time limit per test: 1 second (3 seconds for Python)
memory limit per test: 500 megabytes
input: standard input
output: standard output
points: 100 · problem code: directedcycle

You are given a directed graph with n vertices and m edges. Each edge goes from one vertex to another, and vertices are numbered from 1 to n .

Determine whether the graph contains at least one directed cycle. A directed cycle is a sequence of one or more edges that starts and ends at the same vertex while following edge directions.

Input

The first line contains two integers n and m : the number of vertices and directed edges.

The next m lines each contain two integers a and b , meaning there is a directed edge from vertex a to vertex b .

Output

Print if the graph contains at least one directed cycle. Otherwise, print .

Constraints

- $1 \leq n \leq 200000$
- $0 \leq m \leq 300000$
- $1 \leq a, b \leq n$

Example 1

Input

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

Output

```
NO
```

Explanation

All edges move forward along the chain, so it is impossible to return to a previous vertex.

Example 2

Input

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

Output

```
YES
```

Explanation

The edges $1 \rightarrow 2$, $2 \rightarrow 3$, and $3 \rightarrow 1$ form a directed cycle.