Time Loop Trap

In the mystical land of Chronosia, time flows in mysterious ways. Chronosia is governed by a powerful artifact known as the Chrono Crystal, which controls the flow of time in the land's many towns. Some towns in Chronosia are connected to others by magical pathways, through which time flows from one town to another.

Recently, the Chrono Crystal has started malfunctioning, causing time loops that allow citizens to travel in endless cycles, preventing them from moving forward in time. The wise Chronomancer of Chronosia has tasked you, the Guardian of Time, with identifying and breaking these time loops.

Your mission is to determine if any of the towns in Chronosia are trapped in a time loop. If there is even a single time loop, you must alert the Chronomancer so that it can be fixed.

Problem Statement:

You are given a map of Chronosia with n towns and m magical pathways. Each pathway allows time to flow in one direction from one town to another. Your task is to determine whether there is a time loop in the system of towns and pathways.

A time loop occurs if there is a sequence of towns $T_1 \to T_2 \to \cdots \to T_k \to T_1$ such that time flows from T_1 to T_2, from T_2 to T_3, and so on, eventually flowing back to T_1.

Input:

- The first line contains an integer c, the number of test cases.
- Each test case consists of the following:
  - The first line of the test case contains two integers n and m $(1 \leq n \leq 5000, 0 \leq m \leq 5000)$, representing the number of towns and the number of magical pathways, respectively.
  - The next m lines each contain two integers u and v $(1 \leq u, v \leq n)$, representing a magical pathway that allows time to flow from towns u to v.

Output:

- Output "YES" if there is at least one time loop in Chronosia, otherwise output "NO".

Example Input:

```
2
4 4
1 2
2 3
3 4
4 2
5 5
1 2
2 3
3 4
4 5
4 5
```

Example Output

```
YES
NO
```