Problem B

Metro System Development Simulation

Time limit: 2 seconds
Memory limit: 512 megabytes

The bustling metropolitan city of TTT has been experiencing unprecedented growth in its tech industry, leading to severe traffic congestion and transportation challenges. As the Chief Metro Planning Engineer for the TTT Metropolitan Transit Authority, you've been assigned to design and simulate the city's first comprehensive metro system.

Currently, TTT has n metro stations planned, connected by m uni-directional metro lines, with stations numbered from 1 to n. The transit authority has approved a multi-phase metro expansion project to create an efficient underground transportation network. Your simulation system needs to handle two critical types of metro development operations that will be implemented across different construction phases.

Your task is to simulate q metro development operations that represent real-world construction phases and route planning decisions. Each operation can have two types as described below:

Operation Type 1 - Station Expansion: 1 x d
A new metro station $n+1$ is constructed as part of the current expansion phase, and it is connected to existing station x with a new metro line to ensure network connectivity.

- If $d = 0$, the direction of the new metro line is from station x to the new station $n + 1$ (allowing metro travel from the existing station to the new station)
- If $d = 1$, the direction of the new metro line is from the new station $n + 1$ to station x (allowing metro travel from the new station to the existing station)

The value of n must be incremented by 1 after this operation as the metro system now has $n + 1$ stations to manage.

Operation Type 2 - Route Connectivity Check: 2 x y
The operations control center needs to verify if passengers can travel from station x to station y using the current metro network. Print `Yes` if it's possible to travel from station x to station y through the existing metro lines, print `No` otherwise.

As the metro planning engineer, you need to process these operations in real-time to help transit authority officials make informed decisions about TTT's metro expansion phases and route optimization.

Input

The first line of input contains two space-separated integers n (the initial number of metro stations) and m (the number of existing metro lines).

Next, m lines of input contain two space-separated integers u and v denoting that there is a uni-directional metro line from station u to station v.

Next line contains an integer q denoting the number of metro development operations to simulate.

Next q lines of input contain q operations, one per line, where each operation is one of the two possible types described above.

Constraints

- $1 \leq n, m \leq 5 \times 10^4$
- $1 \leq q \leq 10^5$
- $1 \leq u, v \leq n$
- $d \in \{0, 1\}$
- The values of x, y always correspond to an existing metro station in TTT at the time of the query.

Output

For each Operation Type 2 (route connectivity check), print `Yes` if it's possible to travel from station x to station y, otherwise print `No`.

Sample Input	Sample Output
3 3 1 2 2 3 3 1 6 2 1 3 1 2 0 2 1 4 2 4 1 1 3 1 2 5 1	Yes Yes No Yes

Explanation

Initial State: Metro stations $1, 2, 3$ with lines $1 \to 2$, $2 \to 3$, $3 \to 1$ forming a circular route.

Operation 1: `2 1 3` - Check if passengers can travel from station 1 to station 3.
Route exists: $1 \to 2 \to 3$. Output: `Yes`

Operation 2: `1 2 0` - Build new metro station 4, connect station 2 to station 4 (metro line $2 \to 4$).
Now we have stations $1, 2, 3, 4$ with lines: $1 \to 2$, $2 \to 3$, $3 \to 1$, $2 \to 4$

Operation 3: `2 1 4` - Check if passengers can travel from station 1 to station 4.
Route exists: $1 \to 2 \to 4$. Output: `Yes`

Operation 4: `2 4 1` - Check if passengers can travel from station 4 to station 1.
No route exists from station 4 to station 1. Station 4 is a terminal station with no outgoing lines.
Output: `No`

Operation 5: `1 3 1` - Build new metro station 5, connect station 5 to station 3 (metro line $5 \to 3$).
Now we have stations $1, 2, 3, 4, 5$ with lines: $1 \to 2$, $2 \to 3$, $3 \to 1$, $2 \to 4$, $5 \to 3$

Operation 6: `2 5 1` - Check if passengers can travel from station 5 to station 1.
Route exists: $5 \to 3 \to 1$. Output: `Yes`