

City Construction



The country of Hackerland has n cities connected by m uni-directional roads. The cities are numbered from 1 to n . Recently the government decided to build new cities in Hackerland.

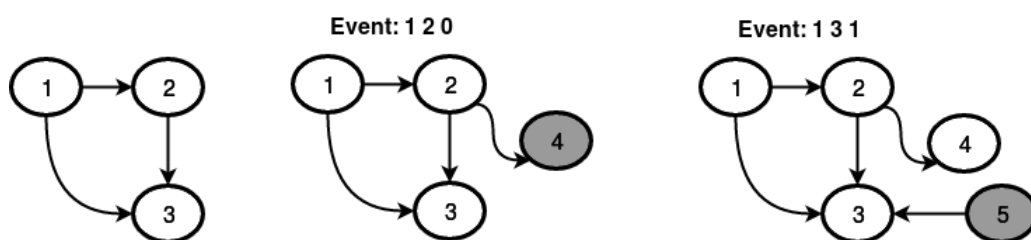
Your task is to simulate q events. An event can have two types as described below:

- **1 x d**: A new city $n + 1$ is constructed in the Hackerland and it is connected to city x .
 - If $d = 0$ the direction of the new road is from x to $n + 1$
 - If $d = 1$ the direction of the new road is from $n + 1$ to x

The value of n has to be incremented by 1 after this event as now there are $n + 1$ cities.

- **2 x y**: Print **Yes** if it's possible to move from city x to city y , print **No** otherwise.

The diagrams shows some example of how an event of type 1 works:



Given the map of the city and the description of the event, can you simulate them?

Input Format

The first line of input contains two space-separated integers n (the number of cities) and m (the number of roads).

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

Next line contains an integer q denoting the number of events.

Next q lines of input contain q events one per line where each event is one of the possible two types.

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 value of x, y always correspond to an existing city in the Hackerland.
- Total number of cities in the Hackerland wont exceed 5×10^4 .

Subtasks:

For 40% of the maximum score, the total number of cities does not exceed 5000.

Output Format

For each event of type 2, print **Yes** if it possible to reach from city x to city y , print **No** otherwise.

Sample Input 0

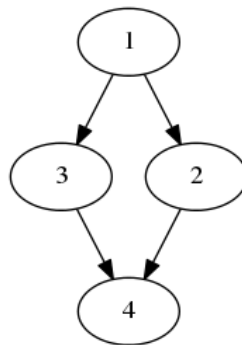
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4 4
1 2
1 3
2 4
3 4
5
1 2 0
2 3 5
2 1 5
1 1 1
2 6 4
```

Sample Output 0

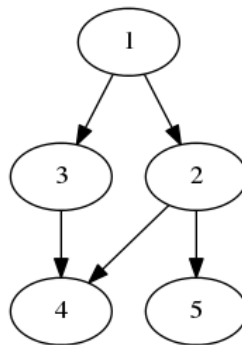
```
No
Yes
Yes
```

Explanation 0

The original graph:



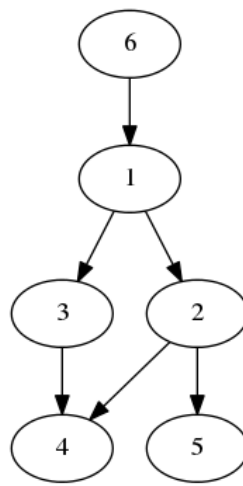
The first event is **1 2 0**. That means a new road is constructed from the city **2** to city **5**.



The second event is **2 3 5**. That means we want to know if anyone can go from the city **3** to city **5**. The answer is **No**.

The third event is **2 1 5**. That means we want to know if anyone can go from the city **1** to city **5**. The answer is **Yes**.

The fourth event is **1 1 1**. That means a new road is constructed from the city **6** to city **1**.



The fifth event is **2 6 4**. That means we want to know if anyone can go from the city **6** to city **4**. The answer is **Yes**.