

Problem B

Please, sit down, we need to negotiate



the friendly version (adapted from MIUP'17)

Negotiations are a black magic art. Before negotiating and having failed to have everyone involved around the table, we need to gather the right people with the right mindset. Without that, the negotiations are doomed to fail.

But how to ensure that, when no one wants to join the negotiation without some established predefined conditions?

Fortunately, here, these conditions are simply stated: “I join the negotiation table if X and Y and ... and Z also agreed to join”

If we number incrementally each potential participant by a natural number, say from 0 to $n - 1$, it is important to ensure that j , the key participant for the negotiation, join it, knowing that each potential participant has a certain number of condition to join the table.

Gathering the people around the table is done in rounds, iteratively. One negotiator joins the table if the people already seated meet his own requirement. By doing that, other negotiators may join the table the next round, because of him.

Task

Taking into account which participant is the key in the negotiation process, and all the negotiator's constraints, your task is to tell the head of the negotiation process that the right conditions are met for a fruitful negotiation.

Input

The first line introduces two numbers: n and m separated by a single space.

The number n is the number of potential negotiators (numbered from 0 to $n - 1$) and m is the number of overall stated conditions.

The second line introduces the id (i.e. the number) of the key negotiator.

The following m lines introduce the conditions with the following format:

$r \ p_1 \ \dots \ p_r \ p$ (with $0 \leq r < n$)
and with the meaning: if p_1 and $\dots \ p_r$ join the table, then p also joins the table

Hints The condition $0 \ p$ means that p is willing to join the table without any conditions. A potential negotiator with no stated condition is a negotiator that categorically refuses to join the negotiation table.

If a potential negotiator has more than one stated condition, this means that he is willing to join the table if at least one of his conditions is fulfilled.

Constraints

Potential participating members: $2 \leq n \leq 20$

Number of stated conditions to join the negotiation table: $0 < m \leq 20$

These constraints define a friendly context for solving the problem.

Output

A single line with: “YES” if the key negotiator is able to join the negotiation, “NO” otherwise.

Sample Input 1

```
4 4
0
0 1
1 1 3
2 0 3 2
1 2 0
```

Sample Output 1

NO

Sample Input 2

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

Sample Output 2

YES