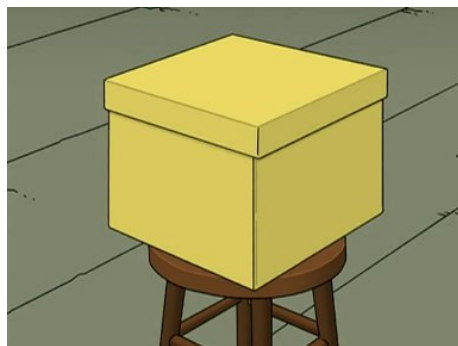


Professor Farnsworth, a renowned scientist that lives in year 3000 working at *Planet Express Inc.*, performed a failed experiment that nearly killed him. As a sub-product, some strange *boxes* were created. Farnsworth gave one of the boxes to Leela, who accidentally discovered that it leads to a *parallel universe*. After that, the *Planet Express* crew traveled to the new discovered parallel universe using the box, meeting their corresponding parallel copies, including a parallel Professor Farnsworth who also created some boxes.



One of the boxes invented by Farnsworth Professor, from *Futurama*.

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Simultaneously, some parallel copies of the Professor created similar boxes in some existing parallel universes. As a result, some universes, including the original one, were endowed with a (possibly empty) collection of boxes leading to other parallel universes. However, the boxes have a bug: besides allowing travels among different parallel universes, they allow for time travels. So, a particular box leads to a distinct parallel universe possibly allowing a voyager to gain or lose a certain number of time units.

More precisely, given two distinct universes A and B , and a non-negative integer number t , a (A, B) -box with *time displacement* t is an object designed to travel between the two universes that can be used *directly* (traveling from A to B) or *reversely* (traveling from B to A). A such box exists in both universes, allowing travels among both universes. A voyager that uses the (A, B) -box directly can travel from universe A to universe B landing t time units in the future. On the other hand, a voyager that uses the (A, B) -box reversely can travel from universe B to universe A landing t time units in the past. Box building requires so much energy that there may be built at most one box to travel between a given pair of different universes.

A *circuit* is defined as a non-empty sequence of parallel universes $\langle s_1, s_2, \dots, s_m \rangle$ such that:

- The first and the last universe in the sequence are the same (i.e., $s_1 = s_m$).
- For every k ($1 \leq k < m$) there is a (s_k, s_{k+1}) -box or a (s_{k+1}, s_k) -box to travel (directly or reversely) from universe s_k to universe s_{k+1} .

The possible existence of circuits is very interesting. Using the corresponding boxes of a circuit, a voyager may experiment real time travels. Professor Farnsworth wants to know if there is a circuit that starts in the original universe and allows travels to the past, constituting a phenomenon known as the *Farnsworth Parabox*. For example, imagine that there are three universes, A , B and C , and that there exist the following boxes: a (A, B) -box with time displacement 3, a (A, C) -box with time displacement 2, and a (B, C) -box with time displacement 4. Clearly, the sequence $\langle A, B, C, A \rangle$ is a circuit, that allows to travel five time units in the future, starting and ending at universe A .

The original Farnsworth Professor, who lives in the original universe, wants to know if the *Farnsworth Parabox* is true or not. Can you help him?

Input

There are several cases to solve. Each case begins with a line with two integer numbers N and B , indicating the number of parallel universes (including the original) and the number of existing boxes, respectively ($2 \leq N \leq 10^2$, $1 \leq B \leq N \cdot (N - 1)/2$). The distinct universes are identified uniquely with the numbers $1, 2, \dots, N$, where the original universe is the number 1. Each one of the next B lines contains three integer numbers i , j and t , describing a (i, j) -box to travel between the universe i and the universe j with time displacement t ($1 \leq i \leq N$, $1 \leq j \leq N$, $i \neq j$, $0 \leq t \leq 10^2$). The input ends with a line with two 0 values.

Output

For each test case output one line with the letter 'Y' if the *Farnsworth Parabox* is true; or with the letter 'N', otherwise.

Sample Input

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

Sample Output

```
N
Y
N
```