12 Grid

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

There is an $N \times N$ grid. The cell in the i-th row and j-th column is denoted as cell (i, j).

You are given M tuples of integers (t_k, i_k, j_k, d_k) $(k = 1, 2, \ldots, M)$. Each tuple (t, i, j, d) satisfies the following:

- t is either 0 or 1.
- If $t = 0$, then $1 \leq i \leq N - 1$ and $1 \leq j \leq N$.
- If $t = 1$, then $1 \leq i \leq N$ and $1 \leq j \leq N - 1$.
- d is either 1 or 2.

You are asked to determine if there is a way to fill each cell of the grid with an integer such that the following conditions are satisfied, and if so, construct one valid configuration:

- The integer written in each cell is between 0 and 10^9 inclusive.
- The absolute difference between the integers written in two adjacent cells (up, down, left, or right) is either 1 or 2.
- For each $k = 1, 2, \ldots, M$, the following holds:
  - If $t_k = 0$, then the absolute difference between the integers written in the cells (i_k, j_k) and $(i_k + 1, j_k)$ is d_k.
  - If $t_k = 1$, then the absolute difference between the integers written in the cells (i_k, j_k) and $(i_k, j_k + 1)$ is d_k.

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{l}
N \ M \\
t_1 \ i_1 \ j_1 \ d_1 \\
t_2 \ i_2 \ j_2 \ d_2 \\
\vdots \\
t_M \ i_M \ j_M \ d_M
\end{array}
$$

- $1 \leq N \leq 1000$
- $0 \leq M \leq \min\{2 \times 10^5, 2N(N-1)\}$
- Each (t_k, i_k, j_k, d_k) satisfies the conditions in the problem statement.
- If $k \neq \ell$, $(t_k, i_k, j_k) \neq (t_\ell, i_\ell, j_\ell)$.
- All input values are integers.

Output

If it is impossible to fill the grid with satisfying the conditions, print `No`.

If it is possible, output $N + 1$ lines. On the first line, print `Yes`. On the $i + 1$-th line $(i = 1, 2, \ldots, N)$, print the integers to be written on the cells $(i, 1), (i, 2), \ldots, (i, N)$ in this order, separated by spaces.

If there are multiple answers, print any.

Examples

standard input	standard output
2 3 0 1 1 2 1 1 1 1 0 1 2 2	Yes 0 1 2 3
2 3 0 1 1 2 1 1 1 2 1 2 1 1	Yes 0 2 2 3
2 4 0 1 1 2 1 1 1 2 1 2 1 1 0 1 2 2	No

Note

For the first example,

```
Yes
5 4
3 2
```

can also be a solution.

For the second example,

```
Yes
0 2
2 1
```

can also be a solution.

For the third example, there are no valid configurations.