

D. Appleman and Complicated Task

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Toastman came up with a very complicated task. He gives it to Appleman, but Appleman doesn't know how to solve it. Can you help him?

Given a $n \times n$ checkerboard. Each cell of the board has either character 'x', or character 'o', or nothing. How many ways to fill all the empty cells with 'x' or 'o' (each cell must contain only one character in the end) are there, such that for each cell the number of adjacent cells with 'o' will be even? Find the number of ways modulo 1000000007 ($10^9 + 7$). Two cells of the board are adjacent if they share a side.

Input

The first line contains two integers n, k ($1 \leq n, k \leq 10^5$) — the size of the board, and the number of cells that has characters initially.

Then k lines follows. The i -th line contains two integers and a character: a_i, b_i, c_i ($1 \leq a_i, b_i \leq n$; c_i is either 'o' or 'x'). This line means: there is a character c_i in the cell that is located on the intersection of the a_i -th row and b_i -th column. All the given cells are distinct.

Consider that the rows are numbered from 1 to n from top to bottom. Analogically, the columns are numbered from 1 to n from left to right.

Output

Print a single integer — the answer to the problem.

Examples

input
3 2 1 1 x 2 2 o
output
2

input
4 3 2 4 x 3 4 x 3 2 x
output
2

Note

In the first example there are two ways:

xxo	xoo
xox	ooo
oxx	oox