

Problem F. ICPC teams

Input file: *standard input*
Output file: *standard output*
Time limit: 3 seconds
Memory limit: 256 mebibytes

You are a coach of the International Collegiate Programming Contest (ICPC) club in your university. There are $3N$ students in the ICPC club and you want to make N teams for the next ICPC. All teams in ICPC consist of 3 members. Every student belongs to exactly one team.

When you form the teams, you should consider several relationships among the students. Some student has an extremely good relationship with other students. If they belong to a same team, their performance will improve surprisingly. The contrary situation also occurs for a student pair with a bad relationship. In short, students with a good relationship must be in the same team, and students with a bad relationship must be in different teams. Since you are a competent coach, you know all M relationships among the students.

Your task is to write a program that calculates the number of possible team assignments. Two assignments are considered different if and only if there exists a pair of students such that in one assignment they are in the same team and in the other they are not.

Input

The input consists of a single test case. The first line contains two integers N ($1 \leq N \leq 10^6$) and M ($1 \leq M \leq 18$). The i -th line of the following M lines contains three integers A_i , B_i ($1 \leq A_i, B_i \leq 3N$, $A_i \neq B_i$), and C_i ($C_i \in \{0, 1\}$). A_i and B_i denote indices of the students and C_i denotes the relation type. If C_i is 0, the A_i -th student and the B_i -th student have a good relation. If C_i is 1, they have a bad relation. You can assume that $\{A_i, B_i\} \neq \{A_j, B_j\}$ if $i \neq j$ for all $1 \leq i, j \leq M$.

Output

Display a line containing the number of the possible team assignments modulo $10^9 + 9$.

Examples

standard input	standard output
2 2 1 2 0 3 4 1	2