Socializing can be a very complicated thing among teenagers. For example, finding a good seating arrangement in a movie theater can be a difficult task. Here is a list of constraints that could potentially apply to two individuals A and B in this situation:

- if A and B are dating, then they must sit beside each other
- if A and B are fighting, then they cannot sit beside each other
- if A and B have just broke up, then they must sit at opposite ends of the row

"Under the table for two?"

Teenage politics is a complicated thing meaning the constraints can get even more complicated than those listed above. However, we restrict this problem to a particular form of constraint that simply specifies a lower or upper bound on the number of seats separating two specific individuals.

The group arrives after everyone else watching the show has been seated. By some stroke of luck, there are exactly as many open seats as there are teenagers and all of these seats appear consecutively in the front row. How many possible seating arrangements satisfy the constraints?

Input

Each test case begins with two integers n and m with $0 < n \leq 8$ and $0 \leq m \leq 20$ where n is the size of the group. For simplicity, assume the teenagers are numbered from 0 to $n-1$. Then of m lines follow, each describing a constraint, where a line consists of three integers a, b, c satisfying $0 \leq a, b < n$ and $0 < |c| < n$. If c is positive then teenagers a and b must sit at most c seats apart. If c is negative, then a and b must sit at least $-c$ seats apart. The end of input is signaled by a line consisting of $n = m = 0$.

Output

The output for each test case is a single line containing the number of possible seating arrangements for the group that satisfy all of the social constraints.

Sample Input

```
3 1
0 1 -2
3 0
0 0
```

Sample Output

```
2
6
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