

Problem G

Dictionary

Time Limit: 1 seconds

Memory Limit: 512 megabytes

Bom is studying words in a language. He realizes that there are similar looking characters that may cause confusion for readers. Bom considers the “distance” between characters on a scale from 1 to 5, with lower being more similar. The distance between two same characters is 1. The “distinctiveness” of a word is defined as the sum of the distances between consecutive characters in a word.

For example, presume that the distance between “e” and “l” is 3, “l” and “y” is 2, “i” and “l” is 1. Then, the distinctiveness of the word “elly” is $3 + 1 + 2 = 6$ (note that the distance between “l” and “l” is 1). The word “lily” has a distinctiveness value of 4, while “i” has a value of 0.

Given Bom’s list of distances between characters and an integer N , Bom wants you to count the number of non-empty words with distinctiveness value at most N .

Input

The first line of input contains two integers, N ($1 \leq N \leq 10^9$) and M , the length of Bom’s list of distances. Any distance not mentioned in the list is assumed to be 1.

For the next M lines, each line contains two characters L_1 and L_2 and an integer F , which means the distance between L_1 and L_2 is F . The distance between L_2 and L_1 is the same as the distance between L_1 and L_2 . Every pair of characters will appear at most once.

Output

The output consists of a single integer, number of words with value at most N , modulo $10^9 + 7$.

Sample Input

```
20 10
e l 3
e o 1
o n 2
o r 4
r a 4
i n 5
e n 2
n t 3
t w 3
w i 5
```

Sample Output

```
470059518
```

Explanation

Examples of satisfying words: “elleonora”, “entwine”, “aaaaaaaaaaaa”.