Task: CZA
Sorcerers of the Round Table

Olimpiada Informatyczna

XXII OI, Stage I. Source file `cza.*` Available memory: 128 MB. *6.10–3.11.2014*

The time has come again for the sorcerers of the round table to hold a privy council. Like so many times before, they began to squabble even before the agenda was presented: the order of the seats around the table proved controversial enough. There are n sorcerers partaking in the council, each one uniquely identified by the height of their pointed hat; the hats' heights are pairwise different integers ranging from 1 to n (the taller the hat, the more senior the sorcerer). For the sake of aesthetics, the heights of hats of two sorcerers sitting next to each other should differ by at most p.

Be warned that some sorcerers are not too fond of others – if a sorcerer a dislikes the sorcerer b, then the sorcerer b may not sit immediately to the right of the sorcerer a. We assume that the chairman (with the hat of height n) has already sat down by the table. In how many ways can the remaining sorcerers be arranged around the table?

Input

The first line of the standard input contains three integers, n, k, and p ($1 \leq n \leq 1\,000\,000$, $0 \leq k \leq 100\,000$, $0 \leq p \leq 3$), separated by single spaces, that specify the number of sorcerers, the number of dislikes among them, and the maximum permissible difference in the height of adjacent hats, respectively.

The k lines that follow contain ordered pairs: the i-th of these lines contains two integers, a_i and b_i ($1 \leq a_i, b_i \leq n$, $a_i \neq b_i$), separated by a single space, specifying that the sorcerer wearing a hat of height a_i dislikes the sorcerer wearing the hat of height b_i. Each such ordered pair appears at most once in the input.

There is a set of tests worth 16% of the total score, in which $n \leq 5$ holds. There is another, disjoint set of tests worth 16% of the total score, in which $p \leq 2$ holds.

Output

The first and only line of the standard output should give an integer equal to the remainder of the division of the number of possible arrangements of the sorcerers by $10^9 + 7$.

Example

For the input data:

```
5 2 3
1 3
5 4
```

the correct result is:

```
6
```

Explanation of the example: The sorcerers can sit around the table in one of the six orders: 53124, 53142, 52143, 53412, 52314, 53214.

Sample grading tests:

`1ocen:` a small test with one sorcerer disliking everybody else;

`2ocen:` $n = 5$, $k = 0$, $p = 3$;

`3ocen:` $n = 1\,000\,000$, $k = 0$, $p = 2$.