L. In Covid-19, What Filial Generation You Are?

Time Limit: 3 seconds

Problem description

There is a community of N (N <= 5000) people. Some of them have been infected with COVID-19. We know the list of people who have been infected, and also know the history of direct communication of everyone (assuming these communications all occurred after the people listed above were infected and regardless of the chronological order of these communications).

Assume:

- The infected person is considered to be the 0-th filial generation (F_0).
- The person who directly communicate with the i-th filial generation (F_i) is called (i+1)-th filial generation (F_{i+1})

So let's find out what filial generation of person X!

For example, there are 6 people, numbered from 1 to 6. Person 2 and 5 have been infected with COVID-19 (F_0). The history of direct communication of every one as below:

- Person 1 directly communicate with person 2, 6.
- Person 2 directly communicate with person 1, 5.
- Person 3 directly communicate with person 4, 5, 6.
- Person 4 directly communicate with person 3, 6.
- Person 5 directly communicate with person 2, 3.
- Person 6 directly communicate with person 1, 3, 4.

With the above information, we know: person 1, 3 are F_1; person 4, 6 are F_2

Input:

The format of input:

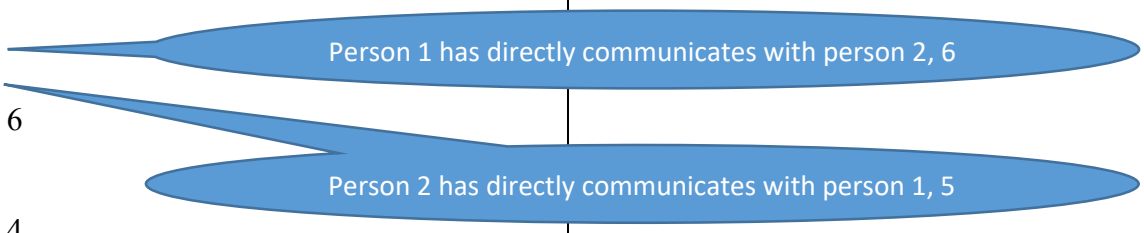
- Line 1: N X (0 < N, X <= 5000)
- Line 2: list of people who have been infected.
- Next N lines: the i-th line displays list of people that directly communicates with person i.

Output:

The output is the filial generation of person X.

Example 1

Input	Output
6 3 2 5 2 6 1 5 4 5 6 3 6 2 3 1 3 4	F1



Example 2

Input	Output
6 4 2 5 2 6 1 5 4 5 6 3 6 2 3 1 3 4	F2