UCF Local Contest (Final Round) — September 11, 2021

Discord Daisy Chain
*filename:* `discord`
Difficulty Level: `Medium-Hard`
Time Limit: `5 seconds`

You are working on several discord bots in one larger server. Each bot has a channel that it "listens" to (in non-technical terms, a bot is in a channel and receives all the messages sent to that channel). When the channel the bot listens to gets a message, the bot will send the same message to a number of other channels (dependent on the bot), causing bots in those channels to receive the message and send the same message to other channels.

Note that all the bots in a channel receive a message sent to the channel and all the bots in the channel will forward the message to their receiving channels.
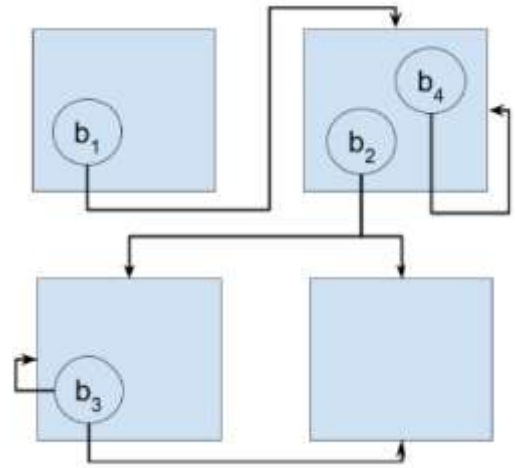
You have the list of bots, and now you're curious if there is a channel such that if you post a message inside of it, all the other channels will have at least one copy of the message. For example, in the configuration illustrated in the picture, if we post a message inside the channel containing bot b_1, all the other channels will have (receive) at least one copy of the message.

Since there may be several such channels, you wonder how many are there?

The Problem:

Given the description of the server (number of channels and bot descriptions), determine the number of channels that can allow for a message to be sent to all the other channels.

The Input:

The first input line contains two integers: c ($1 \leq c \leq 100{,}000$), indicating the number of channels in the server, and b ($1 \leq b \leq 100{,}000$), indicating the number of bots in the server.

Each of the next b input lines starts with an integer, l_i ($1 \leq l_i \leq c$), indicating the channel the ith bot is listening to (i.e., the channel the bot is in), and m_i ($1 \leq m_i \leq c$) indicating the number of channels the ith bot will send the message to. The line will contain m_i more integers, $a_1, a_2, \ldots a_{li}$ ($1 \leq a_j \leq c$), indicating the channels to which the ith bot will forward its messages to.

It is guaranteed that the total number of receiving channels in the input will not exceed 200,000.

The Output:

Print the number of channels that can be used to send a message to all the other channels.

Sample Input   **Sample Output**

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

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

Explanation of the First Sample Input/Output:

This data set corresponds to the configuration illustrated in the above picture.

There are 4 channels and 4 bots.
Bot 1 is in Channel 1 and forwards messages to Channel 2.
Bot 2 is in Channel 2 and forwards messages to Channels 3 and 4.
Bot 3 is in Channel 3 and forwards messages to Channels 3 and 4.
Bot 4 is in Channel 2 and forwards messages to Channel 2.

Messages posted in Channel 1 will get to all the other channels. This is the only such channel.