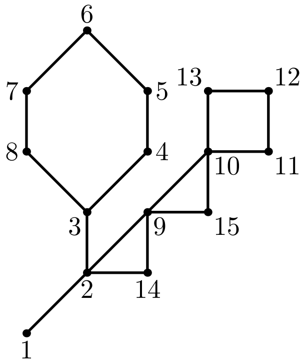
Problem A. Cactus Search

Time limit: 3 seconds

> If you want to make an array problem harder — solve it on a tree.
> If you want to make a tree problem harder — solve it on a cactus
>
> Conventional wisdom

NEERC featured a number of problems in previous years about cactuses — connected undirected graphs in which every edge belongs to at most one simple cycle. Intuitively, a *cactus* is a generalization of a tree where some cycles are allowed. An example of a cactus from NEERC 2007 problem is given on the picture below.



You are playing a game on a cactus with Chloe. You are given a cactus. Chloe had secretly picked one vertex v from the cactus and your goal is to find it. You can make at most 10 guesses. If your guess is vertex v — you win. Otherwise, if your guess is another vertex u — Chloe helps you and tells you some vertex w which is adjacent to u and such that the distance from w to v is strictly less than the distance from u to v (here the *distance* is the number of edges in the shortest path between vertices).

Interaction Protocol

First, the testing system writes a line with two integers n and m ($1 \le n \le 500; 0 \le m \le 500$). Here n is the number of vertices in the graph. Vertices are numbered from 1 to n. Edges of the graph are represented by a set of edge-distinct paths, where m is the number of such paths. Each of the following m lines contains a path in the graph. A path starts with an integer k_i ($2 \le k_i \le 500$) followed by k_i integers from 1 to n. These k_i integers represent vertices of a path. Adjacent vertices in a path are distinct. The path can go to the same vertex multiple times, but every edge is traversed exactly once in the whole input. The graph in the input is a cactus.

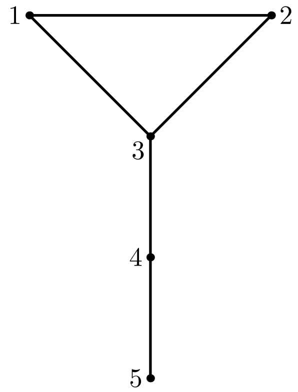
To prove that your program can find a secret vertex in at most 10 queries, you need to do that n times. Each time testing system picks some vertex before interacting with your program. Your program makes guesses by writing lines with a single number u ($1 \le u \le n$).

Testing system responds by writing lines with one of the two responses:

- "`FOUND`" — means that your guess is correct. After that, your program should proceed to the next test case or terminate if n vertices were already guessed.
- "`GO` w" — means that your guess is incorrect, but now you know that the distance from vertex w to the secret vertex is less than the distance from u. It is guaranteed that vertices u and w are connected by an edge.

Do not forget to flush the output after each guess!

Example

standard input	standard output	Illustration
5 2		
5 1 2 3 4 5		
2 1 3		
	3	
FOUND		
	3	
GO 4		
	4	
FOUND		
	3	
GO 2		
	2	
FOUND		
	3	
GO 1		
	1	
FOUND		
	3	
GO 4		
	4	
GO 5		
	5	
FOUND		

Note

Empty lines are added to the standard input and the standard output examples for clarity only. They are not present during the actual interaction.