G   Gruesome CAPTCHAs

As the friction between humans and AI has been lately increasing, you have found that your favourite website with AI generated content introduced new CAPTCHAs. Although you were prepared for selecting all the fire hydrants or even deciphering an obscure text, anti-human CAPTCHA is definitely not what you expected.

You are presented with a directed graph having no self-loops, no double edges, and no bidirectional edges. After clicking 'continue', the edges disappear and the nodes of the graph start flashing, one at a time. When a node flashes, all the outgoing and ingoing connections change their direction. After a series of flashes you are asked to write which node (if any) is the centre of the graph. A node that is a centre has a direct outgoing connection to every other node of the graph. Before you have time to write anything, the nodes start flashing again, further altering the connections.

Source: www.commitstrip.com

Although you are determined to break the CAPTCHA, the graphs presented are huge and you only have a second to succesfully complete it. Thankfully, as in every website for robots, you can connect to the website through an API, so you may automate the process of solving the CAPTCHA.
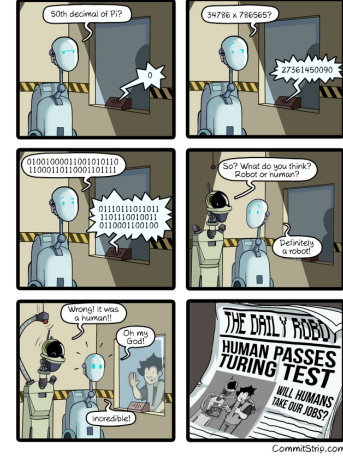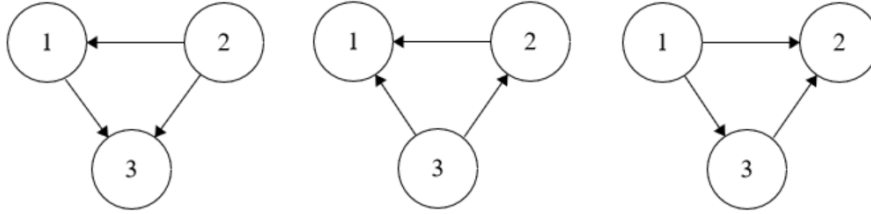
Figure G.1: Illustration of Sample Input/Output 1. The input graph is the graph on the left. After the first series of flashes, all edges connected to node 3 change direction. Now 3 is a graph centre. After the second series of flashes, all edges connected to node 1 change direction. Now 1 is a graph centre.

Input

The input consists of:

- One line with three integers n, e, q ($3 \leq n \leq 10^3$, $3 \leq e \leq 3 \cdot 10^5$, $1 \leq q \leq 10^4$), the number of nodes, the number of edges between them, and the number of queries. Each node is assigned a distinct index from 1 to n.

- e lines, each containing two distinct integers a, b ($1 \leq a, b \leq n$), indicating an edge from node a to node b.

- *q* groups of 2 lines, each specifying a query as follows:

  - One line with an integer t $(1 \leq t \leq 10^4)$, indicating the number of changes in the query.
  - One line with t integers x $(1 \leq x \leq n)$, the nodes whose edges change direction.

It is guaranteed that in total over all q queries, there are at most 10^4 nodes whose edges change direction.

Output

For each of the q queries, print impossible if the graph has no centre, or the index of the node that is the centre of the graph.

Sample Input 1
3 3 2
2 1
1 3
2 3
1
3
1
1

Sample Output 1
3
1

Sample Input 2
4 4 2
4 2
3 2
1 4
2 1
1
2
3
3 2 4

Sample Output 2
impossible
2