

Homesick

You and your friends just graduated from the Best of All Programming College and want to celebrate your degrees. Unfortunately your friends are real adventurers and want to go on a road trip whereas you get homesick rather quickly and would prefer to stay home. Your friends do however decide to put you in charge of planning the trip, so you have a great idea: you will find the shortest road trip possible, so you can be back as soon as possible. You have a map of your entire country and start planning right away.

There are of course two very important requirements of any road trip: you start and end at your house and cannot just turn around at some point else your friends would start complaining. Concretely this means that if you are at a place y and just came from a place x , you cannot just turn around and go back to x .

You are given places you can visit and all the different roads between these places, which all happen to have exactly the same length. Find the shortest possible road trip you and your friends can go on.

Input

The input consists of:

1. One line with two integers: $1 \leq n \leq 10^6$ the amount of different places you can visit and $1 \leq e \leq 10^6 + 1$ the amount of roads there are.
2. One line with an integer $1 \leq h \leq n$ the location of your home.
3. e lines with two integers $1 \leq a \neq b \leq n$ indicating there is a road between points a and b .

Output

If there is no road trip possible at all, output 'impossible'. Else, output the sequence of places you visit on your planned shortest road trip in the order in which you visit them. You should include your house at the start and end as well.