

Problem B: Beppo's Balloons

Your local community has a big summer festival every year where all the people of the district come together to enjoy the weather, eat hearty food, drink some beverages and watch different show acts. This year, at one point the clown Beppo is performing tricks for the audience. After the big show he stays around and plays different fun games with all who want to participate. At the moment Beppo has n shells in front him. He puts a small coin under one of them and starts swapping shells around with each swap exchanging the positions of exactly two shells. After multiple swaps the next person in line must guess under which shell the coin is and if they are correct, the clown makes a balloon animal for them.



Did you know that ... ?



... even though balloon modelling is quite a popular trick among entertainers nowadays, the origins are actually only speculated about? Often recurring names are Herman Bonnert, who allegedly pioneered balloon modelling at a magician convention in 1939, and Henry J. Maar, who allegedly entertained his crowd with balloon modelling in 1930.

Input

The input consists of:

- One line with three integers n , s and p ($3 \leq n \leq 100$, $1 \leq s \leq 10^5$, $1 \leq p \leq n$), the number of shells, the number of swaps and the starting position of the coin.
- s lines, the i th of which contains two integers a and b ($1 \leq a, b \leq n$ or $a, b = -1$) indicating that the shell at position a was swapped with the shell at position b in the i th swap. -1 means you missed the position of the corresponding shell. Every swap is guaranteed to exchange the positions of exactly two shells.

Output

Output all the possible positions the coin can be in after performing all swaps. You may output them in any order.

Sample Input 1

```
10 3 8
8 9
4 3
9 4
```

Sample Output 1

```
4
```

Sample Input 2

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

Sample Output 2

```
1 2 3
```

Sample Input 3

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

Sample Output 3

```
1 3
```

Sample Input 4

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

Sample Output 4

```
1 2 3 4 5
```