Problem C: Unavoidable Intersections

Advanced Algorithms for Programming Contests

Restrictions

Time: 2 seconds
Memory: 512 MB

Problem description

As he is – on principle – opposed to all forms of motorized transportation, Beppo needs to walk all the way from his home to his workplace every day. Starting at the intersection at which he lives, he needs to follow a series of bidirectional roads and intersections connecting them until he finally arrives at his workplace, which is also located at an intersection. Of course he figured out the shortest path long ago, but after a while, following it every single day became way too boring. Nowadays, he instead leaves the house trying to find an interesting new path to work. However, something about this is bothering him very much: No matter how hard he tries, some of the intersections (besides the ones where he starts and ends his commute) seem to be unavoidable, in that every path he can choose will necessarily contain them. But is this actually the case or has he simply not tried hard enough to find ways around them? Unfortunately he cannot program well enough to check this by himself, so you should help him.

Input

The input consists of

- one line containing N ($3 \leq N \leq 2 \cdot 10^4$) and M ($N - 1 \leq M \leq 2 \cdot 10^5$) – the number of intersections and roads in the town where Beppo lives, respectively
- one line containing h and w ($1 \leq h, w \leq N, h \neq w$) – the indices of the intersections where Beppo's home and workplace are located
- M lines containing descriptions of the roads – each description consists of two integers a and b ($1 \leq a, b \leq N$), denoting a road bidirectionally connecting intersections a and b. It is guaranteed that each intersection can be reached from each other intersections through a series of roads.

Output

First output the number of unavoidable intersections as described above. If there are any, output their indices on the next line, in the order in which Beppo visits them on his way to work.

Note that, even though intersections h and w are of course part of every h-w-path, Beppo accepts that as natural and doesn't view them as the kind of unavoidable intersections he despises (and wants you to calculate).

Sample input and output

Input	**Output**
3 2 1 2 1 3 1 2	0
3 2 1 3 1 2 2 3	1 2
9 12 9 6 1 2 2 3 4 5 2 6 2 7 8 9 1 3 1 4 1 5 6 7 3 8 3 9	2 3 2