## Painting vertices **P76043_en**

Desè Concurs de Programació de la UPC - Semifinal (2012-06-30)

You are given a directed graph, where some vertices are initially painted and some are not, and two vertices $x$ and $y$. Please paint the minimum number of additional vertices so that there is a path from $x$ to $y$ that only passes through painted vertices.

### Input

Input consists of several cases. Every case begins with the number of vertices $n$, the starting vertex $x$ and the final vertex $y$. Next comes a number $m$, followed by $m$ different arcs $u$ $v$ where $u \neq v$. Follow a number $p$, followed by the $p$ vertices initially painted. Assume $2 \leq n \leq 10^4$, $x \neq y$, $0 \leq m \leq 5n$, and $0 \leq p \leq n$. The vertices are numbered starting at 0.

### Output

For every case, print the minimum number of vertices to paint so that there is a path from $x$ to $y$ that only passes through painted vertices, $x$ and $y$ included. If it is impossible, state so.

### Sample input

```
2 1 0
1  1 0
0

2 0 1
0
2  0 1

5 0 2
6  0 1  1 2  0 3  3 1  3 4  4 2
4  0 3 4 2

8 7 0
11  4 1  6 0  7 4  5 3  7 5
1 6  6 7  0 2  5 1  4 2  3 6
3  6 4 2
```

### Sample output

```
2
impossible
0
3
```

### Problem information

Author : Salvador Roura
Generation : 2013-11-13 15:04:05