



## 3502 - The mysterious X network

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One of the reasons for which École polytechnique (nicknamed ``X" for reasons to be explained during the debriefing talk) is so deeply rooted in French society is its famous network of camarades - former students of the same school. When one camarade wants something (money, job, etc.), he can ask this network for help and support. In practice, this means that when he/she wants to reach some other camarade, not always of the same year, then surely he can find intermediate camarades to get to her/him. Note that the ``camarade" relationship is symmetric. Due to the magic of the X network, there is always a means to reach anybody.

The program you have to write is supposed to help to minimize the number of these intermediate camarades.

### Input

**The input begins with a single positive integer on a line by itself indicating the number of the cases following, each of them as described below. This line is followed by a blank line, and there is also a blank line between two consecutive inputs.**

The huge file of all living camarades is simplified so as to obey the following format. The first line in the file is the number of camarades, say  $N$ , an integer  $1 \leq N \leq 10^5$ . Camarades are labeled from 0 to  $N - 1$ . Follow  $N$

lines. Each line starts with the camarade label  $c$ , followed by the number of other camarades he/she knows, say  $n_c$ , followed by the labels of those  $n_c$  camarades. All these integers are separated by a single blank. It is assumed that  $n_c$  is always less than 100. The last line in the file is the label of the camarade seeking help (say  $c_1$ ) followed by the label of the camarade he wants help from, say  $c_2$  ( $c_2 \neq c_1$ ).

### Output

**For each test case, the output must follow the description below. The outputs of two consecutive cases will be separated by a blank line.**

Your program should output three integers separated by a blank:  $c_1$ ,  $c_2$  and the minimal number of intermediate camarades to reach  $c_2$ .

### Sample Input

```
1
4
0 3 1 2 3
1 1 0
2 2 0 3
3 2 0 2
1 2
```

## Sample Output

1 2 1

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