

ABC Blocks

ABC college of technology has a number of blocks which houses a number of academic departments and other facilities.

The following are some of the blocks and the facilities there.

- 1 a block-admin
- 2 b block-book depot
- 3 d block-conf hall
- 4 f block-canteen
- 5 i block-industry
- 6 m block-applied science block
- 7 n block-management
- 8 o block-hostel
- 9 j block-mech block
- 10 t block-textile block
- 11 eb bock-computer science block

Each block is denote by a number. Some of these blocks are linked to each other through bridges, to navigate easier.

You are to guide a student from a block to the destination through all possible paths.

Input

The first line consists of a single integer which is the destination.

The following lines each consist of a pair of positive integers separated by a space and terminated by a new-line. They represent the blocks connected by a bridge.

For example, if 1 2 appears on a line, then there is a bridge between block a and b. The final line consists of a pair of 0's.

Output

Your output must consist of a line for each valid route from the a block to the destination. The blocks must appear separated by a space, terminated by a new-line. Include only routes which do not pass through any blocks more than once.

Example

Input:

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

3 4

0 0

Output:

1 2 3 4 5

1 2 5

1 4 3 2 5

1 4 5