Problem A. Root the tree

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You are given an unrooted tree with n nodes and $n-1$ edges. The nodes are numbered from 1 to n. You want to "root the tree"with respect to a given root node r, and find each node's parent node.

Input

The first line of the input contains integers n and r, the number of nodes in the tree and the root node respectively. $(2 \leq n \leq 10^5, 1 \leq r \leq n)$

The next $n-1$ lines of the input contains integers x_i and y_i, denoting that an edge exists between node x_i and node y_i. $(1 \leq x_i, y_i \leq n)$ Note that the edges are given in no specific order.

Output

The output should consist of n lines. The ith line should contain a single integer, denoting the parent node of node i. The root node r has no parent, so print -1 in the rth line.

Examples

standard input	standard output
3 2 1 2 2 3	2 -1 2
7 1 1 2 1 3 1 4 2 5 2 6 4 7	-1 1 1 1 2 2 4