Problem J. Tree Constructer

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

MianKing has a Graph Constructer : The input of it is a sequence $a_{1...n}$ $(0 \leq a_i < 2^{60})$ and the output of it is an undirected graph with n nodes, edge (x, y) is in this graph if and only if $(a_x \ or \ a_y) = 2^{60} - 1$

For example, if the input is $a_{1...3} = \{2^{60} - 1, 2^{60} - 2, 1\}$, the output is the graph $\{(1, 1), (1, 2), (1, 3), (2, 3)\}$

Now GreenKing has a tree with n nodes, MianKing wants to find a sequence as input to get this tree. You need to help him find a sequence satisfy the condition.

Input

The first line has one integer n.

Then there are $n - 1$ lines, each line has two integers (x, y) denotes an edge in the tree.

$1 \leq n \leq 100$.

Output

Output n integers $a_{1...n}$ denotes the sequence you find.

You should guaranteed that $0 \leq a_i < 2^{60}$

It's guaranteed that the solution always exists.

Example

standard input	standard output
3 1 2 2 3	1 1152921504606846974 1