

## Problem J. Values on a Tree

Input file: *standard input*  
Output file: *standard output*  
Time limit: 1 second  
Memory limit: 512 mebibytes

You are given a tree with  $n$  vertices. The length of each edge is exactly 1. For any non-empty subset  $S$  of the vertices,  $value(S)$  is equal to the maximum of  $dis(u, v)$  over all pairs  $(u, v) \in S$ , where  $dis(u, v)$  is equal to the distance between  $u$  and  $v$  in the tree.

It is easy to find that  $value(S)$  satisfies  $0 \leq value(S) < n$ . For each  $0 \leq K \leq n - 1$ , print the number of the subsets  $S$  such that  $value(S) = K$ .

### Input

The first line of input contains an integer  $n$  ( $1 \leq n \leq 3000$ ), the number of vertices in the graph. Then  $n - 1$  lines follow. Each of them contains two integers  $u$  and  $v$  which mean that there is an edge between  $u$  and  $v$  ( $1 \leq u, v \leq n$ ). It is guaranteed that the given graph is a tree.

### Output

Print a line containing exactly  $n$  integers. The  $i$ -th integer must be the number of non-empty subsets  $S$  which satisfy  $value(S) = i - 1$ . The answers may be very large, so print each answer modulo 998 244 353.

### Examples

standard input	standard output
2 1 2	2 1
4 1 3 2 4 4 1	4 3 4 4