# Domain Compression

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|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 2 seconds |
| Memory limit: | 512 megabytes |

Gojo has a tree with $n$ vertices. He learned the technique of domain compression, which works as follows:

- First, he chooses some vertex $v$ which was not previously deleted from the graph. Next, for each pair of vertices $u < w$ which are connected to $v$, he adds an undirected edge $(u, w)$ if it was not previously contained in the graph. After that, he erases $v$ from the graph with all the edges incident to it.

For each $k$ ($1 \le k \le n$), he is interested in the total number of edges in the remaining graphs for all $\frac{n!}{(n-k)!}$ ways to perform the operations. Since the answers can be very large, output them modulo 998 244 353.

## Input

The first line contains an integer $n$ ($2 \le n \le 10^5$) — the number of vertices in the tree.

Next, $n-1$ lines contain pairs of integers $u_i, v_i$ ($1 \le u_i, v_i \le n$) — the description of the edges of the tree.

## Output

Output $n$ integers — the total number of edges for each $k$ modulo 998 244 353.

## Examples

| standard input | standard output |
|---|---|
| 5<br>1 2<br>2 3<br>3 5<br>3 4 | 16 44 60 0 0 |
| 8<br>1 2<br>2 3<br>2 4<br>4 5<br>4 7<br>7 8<br>6 7 | 51 316 1596 6120 15720 20160 0 0 |