

## D. Tree

time limit per test: 2 seconds  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

Little X has a tree consisting of  $n$  nodes (they are numbered from 1 to  $n$ ). Each edge of the tree has a positive length. Let's define the distance between two nodes  $v$  and  $u$  (we'll denote it  $d(v, u)$ ) as the sum of the lengths of edges in the shortest path between  $v$  and  $u$ .

A permutation  $p$  is a sequence of  $n$  distinct integers  $p_1, p_2, \dots, p_n$  ( $1 \leq p_i \leq n$ ). Little X wants to find a permutation  $p$  such that sum is maximal possible. If there are multiple optimal permutations, he wants to find the lexicographically smallest one. Help him with the task!

### Input

The first line contains an integer  $n$  ( $1 \leq n \leq 10^5$ ).

Each of the next  $n - 1$  lines contains three space separated integers  $u_i, v_i, w_i$  ( $1 \leq u_i, v_i \leq n; 1 \leq w_i \leq 10^5$ ), denoting an edge between nodes  $u_i$  and  $v_i$  with length equal to  $w_i$ .

It is guaranteed that these edges form a tree.

### Output

In the first line print the maximum possible value of the described sum. In the second line print  $n$  integers, representing the lexicographically smallest permutation.

### Examples

input
2 1 2 3
output
6 2 1

  

input
5 1 2 2 1 3 3 2 4 4 2 5 5
output
32 2 1 4 5 3