

# Rainbow Roads



You are given a tree with  $n$  nodes (conveniently numbered from 1 to  $n$ ). Each edge in this tree has one of  $n$  colors. A path in this tree is called a *rainbow* if all adjacent edges in the path have different colors. Also, a node is called *good* if every simple path with that node as one of its endpoints is a *rainbow* path.

Find all the *good* nodes in the given tree.

A simple path is a path that does not repeat any vertex or edge.

## 1 Input

The first line of input contains a single integer  $n$  ( $1 \leq n \leq 50,000$ ).

Each of the next  $n - 1$  lines contains three space-separated integers  $a_i$ ,  $b_i$ , and  $c_i$  ( $1 \leq a_i, b_i, c_i \leq n$ ;  $a_i \neq b_i$ ), describing an edge of color  $c_i$  that connects nodes  $a_i$  and  $b_i$ .

It is guaranteed that the given edges form a tree.

## 2 Output

On the first line of the output, print  $k$ , the number of good nodes.

In the next  $k$  lines, print the indices of all good nodes in numerical order, one per line.

For the first sample, node 3 is good since all paths that have node 3 as an endpoint are rainbow. In particular, even though the path 3—4—5—6 has two edges of the same color (i.e. 3—4, 5—6), it is still rainbow since these edges are not adjacent.

### 3 Sample Input and Output

8 1 3 1 2 3 1 3 4 3 4 5 4 5 6 3 6 7 2 6 8 2	4 3 4 5 6
8 1 2 2 1 3 1 2 4 3 2 7 1 3 5 2 5 6 2 7 8 1	0
9 1 2 2 1 3 1 1 4 5 1 5 5 2 6 3 3 7 3 4 8 1 5 9 2	5 1 2 3 6 7
10 9 2 1 9 3 1 9 4 2 9 5 2 9 1 3 9 6 4 1 8 5 1 10 5 6 7 9	4 1 6 7 9