

## A. Xor-tree

difficulty: 1300  
time limit per test: 1 second  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

Iahub is very proud of his recent discovery, propagating trees. Right now, he invented a new tree, called xor-tree. After this new revolutionary discovery, he invented a game for kids which uses xor-trees.

The game is played on a tree having  $n$  nodes, numbered from 1 to  $n$ . Each node  $i$  has an initial value  $init_i$ , which is either 0 or 1. The root of the tree is node 1.

One can perform several (possibly, zero) operations on the tree during the game. The only available type of operation is to pick a node  $x$ . Right after someone has picked node  $x$ , the value of node  $x$  flips, the values of sons of  $x$  remain the same, the values of sons of sons of  $x$  flips, the values of sons of sons of sons of  $x$  remain the same and so on.

The goal of the game is to get each node  $i$  to have value  $goal_i$ , which can also be only 0 or 1. You need to reach the goal of the game by using minimum number of operations.

### Input

The first line contains an integer  $n$  ( $1 \leq n \leq 10^5$ ). Each of the next  $n - 1$  lines contains two integers  $u_i$  and  $v_i$  ( $1 \leq u_i, v_i \leq n$ ;  $u_i \neq v_i$ ) meaning there is an edge between nodes  $u_i$  and  $v_i$ .

The next line contains  $n$  integer numbers, the  $i$ -th of them corresponds to  $init_i$  ( $init_i$  is either 0 or 1). The following line also contains  $n$  integer numbers, the  $i$ -th number corresponds to  $goal_i$  ( $goal_i$  is either 0 or 1).

### Output

In the first line output an integer number  $cnt$ , representing the minimal number of operations you perform. Each of the next  $cnt$  lines should contain an integer  $x_i$ , representing that you pick a node  $x_i$ .

### Examples

input

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

output

```
2
4
7
```

429A Xor-tree

dfs and similar, trees

<https://codeforces.com/problemset/problem/429/A>

[github.com/andy489](https://github.com/andy489)