

# Party

Time limit: 0.5 second

## Background

The president of the Ural State University is going to make an 80<sup>th</sup> Anniversary party. The university has a hierarchical structure of employees; that is, the supervisor relation forms a tree rooted at the president. Employees are numbered by integer numbers in a range from 1 to  $N$ . The personnel office has ranked each employee with a conviviality rating. In order to make the party fun for all attendees, the president does not want both an employee and his or her immediate supervisor to attend.

## Problem

Your task is to make up a guest list with the maximal conviviality rating of the guests.

## Input

The first line of the input contains a number  $N$ .  $1 \leq N \leq 6000$ . Each of the subsequent  $N$  lines contains the conviviality rating of the corresponding employee. Conviviality rating is an integer number in a range from  $-128$  to  $127$ . After that the supervisor relation tree goes. Each line of the tree specification has the form:

<L> <K>

This means that the  $K^{th}$  employee is an immediate supervisor of  $L^{th}$  employee. Input is ended with the line:

0 0

## Output

The output should contain the maximal total rating of the guests.

## Sample

input	output
7 1 1 1 1 1 1 1 1 1 1 3 2 3 6 4 7 4 4 5 3 5 0 0	5