

## Problem K. Monster Hunter

Input file: *standard input*  
Output file: *standard output*  
Time limit: 4 seconds  
Memory limit: 512 mebibytes

Little Q is fighting against scary monsters in the game “Monster Hunter”. The battlefield consists of  $n$  intersections, labeled by  $1, 2, \dots, n$ , connected by  $n - 1$  bidirectional roads like a tree. Little Q is now at intersection 1 and has  $X$  health points (HP).

There is a monster at each intersection except intersection 1. When Little Q moves to the  $k$ -th intersection for the first time, he must fight the monster at that intersection. During the fight, he will lose  $a_i$  HP. And when he finally beats the monster, he will be awarded  $b_i$  HP. Note that when HP becomes negative ( $< 0$ ), the game will end, so never let this happen. If Little Q visits the same intersection more than once, the fight happens only on the first visit, as monsters do not have an extra life.

When all monsters are cleared, Little Q will win the game. Please write a program to compute the minimum initial HP that can lead to victory.

### Input

The first line of the input contains an integer  $T$  ( $1 \leq T \leq 2000$ ), denoting the number of test cases.

In each test case, there is one integer  $n$  ( $2 \leq n \leq 100\,000$ ) on the first line, denoting the number of intersections.

Each of the next  $n - 1$  lines contains two integers  $a_i$  and  $b_i$  ( $0 \leq a_i, b_i \leq 10^9$ ) describing monsters at intersections  $2, 3, \dots, n$ .

Each of the next  $n - 1$  lines contains two integers  $u$  and  $v$  ( $1 \leq u, v \leq n, u \neq v$ ) denoting a bidirectional road between intersection  $u$  and intersection  $v$ . It is guaranteed that the roads form a tree.

It is guaranteed that the sum of all  $n$  is at most  $10^6$ .

### Output

For each test case, print a single line containing an integer, denoting the minimum initial HP required to win the game.

### Example

standard input	standard output
1 4 2 6 5 4 6 2 1 2 2 3 3 4	3