

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	3
4	
2 6	
5 4	
6 2	
1 2	
2 3	
3 4	