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**Lamps and batteries****P28695\_en**Dotzè Concurs de Programació de la UPC - Final (2014-10-01)

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A certain castle consists of  $n$  rooms connected by corridors that form a tree. Every room is illuminated by several wall lamps. Every lamp works with one huge battery. Batteries are identical and so heavy that only one can be carried at a time.

A recent visitor of the castle removed the batteries from all lamps, and moved some of them to different rooms. Suppose that it takes  $e$  seconds to traverse a corridor without carrying any battery,  $c$  seconds carrying one, and  $i$  seconds to install a battery into a lamp located in the same room. What is the minimum time to install one battery into every lamp? You must start and finish in the reception room of the castle.

**Input**

Input consists of several cases. Every case begins with  $n$ ,  $e$ ,  $c$  and  $i$ , followed by  $n - 1$  pairs of rooms describing the corridors, followed by  $n$  pairs of numbers describing the amount of lamps and batteries inside each room. Assume  $1 \leq n \leq 10^4$ ,  $e \leq c$ , that  $e$ ,  $c$  and  $i$  are between 1 and 100, and that there are no more than 100 lamps or batteries inside each room. Rooms are numbered from 0 to  $n - 1$ . The reception room is number 0. The total number of lamps equals the total number of batteries.

**Output**

For every case, print the optimum time to install one battery into every lamp. The test cases are such that the result is never larger than  $10^9$ .

**Sample input**

```
3 30 60 10
0 1 0 2
0 0 1 0 0 1

3 30 60 10
0 1 2 1
1 3 1 0 1 0

3 30 60 10
2 1 1 0
0 0 0 0 1 1

5 30 60 10
0 1 0 2 2 3 2 4
0 0 1 0 1 1 1 2 0 0
```

**Sample output**

```
190
300
130
300
```

**Problem information**

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