Marbles On A Tree

n boxes are placed on the vertices of a rooted tree, which are numbered from 1 to n, $1 \leq n \leq 10\,000$. Each box is either empty or contains a number of marbles; the total number of marbles is n.

The task is to move the marbles such that each box contains exactly one marble. This is to be accomplished be a sequence of moves; each move consists of moving one marble to a box at an adjacent vertex. What is the minimum number of moves required to achieve the goal?

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Input

The input contains up to 10 cases. Each case starts with the number n followed by n lines. Each line contains at least three numbers which are:

- $1 \leq v \leq n$, the number of a vertex. The vertices are numbered from 1 to n and are given in increasing order in the input.
- $0 \leq m \leq n$, the number of marbles originally placed at vertex v.
- $0 \leq d \leq n-1$, the number of children of v.

Then (on the same line) follow d distinct vertex numbers giving the identities of the children of v.

The input is terminated by a case where $n = 0$ and this case should not be processed.

Output

For each case in the input, output the smallest number of moves of marbles resulting in one marble at each vertex of the tree.

Sample Input 1

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

Sample Output 1

```
7
14
20
```

Problem ID: marblestre
CPU Time limit: 1 secor
Memory limit: 1024 ME
Difficulty: 3.0

Category: 3.4e, Non Cla
Easier
Hint: greedy; also availa
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