Tree of Acorns

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 1500 mebibytes

Scrat has become much more sensible after meeting Scratte. They live in a tree together and Scrat has paid more attention to storing foods. Each day he brings some acorns home and stores them in some vertices of the tree. Some days however, he doesn't feel well and spends time with Scratte counting number of acorns stored in a subtree of some vertex. They are not very good at counting and that's where you come in.

Formally, the tree has n vertices numbered from 1 to n. The tree is rooted at 1. You are provided Scrat's daily log for q days. Each day can be classified into two types of operations —

1. Scrat chooses a vertex u and two integers k, x. He stores x acorns in each of the vertices in the subtree of u which are exactly k distance away from u.

2. Scrat wants to count the number of acorns in the subtree of a chosen vertex u.

Initially, the tree has no acorns in any of the vertices.

Input

First line contains an integer n. $n - 1$ lines follow describing the tree. Each of these lines contain two space separated integers u, v indicating that there is an edge between vertex u and v. It is guaranteed that $1 \le u < v \le n$.

Another line follows with an integer q, the number of days in the log. q lines follow. Each line has either of these integers —

- 1 u_i k_i x_i — this indicates that Scrat performed a type-1 operation mentioned above.

- 2 u_i — Scrat wants to perform operation type-2.

Output

For each type-2 operation, output an integer denoting the proper count.

Scoring

For all subtasks: $1 \le x_i \le 10^7$.

- Subtask 1 (5 points): $2 \le n \le 5 \times 10^3$, $1 \le q \le 5 \times 10^3$, $0 \le k_i \le n$.

- Subtask 2 (21 points): $2 \le n \le 2 \times 10^5$, $1 \le q \le 2 \times 10^5$, $0 \le k_i \le n$ and all vertices except the root has maximum degree = 2.

- Subtask 3 (27 points): $2 \le n \le 2 \times 10^5$, $1 \le q \le 2 \times 10^5$, $0 \le k_i \le 1$.

- Subtask 4 (47 points): $2 \le n \le 2 \times 10^5$, $1 \le q \le 2 \times 10^5$, $0 \le k_i \le n$.

Example

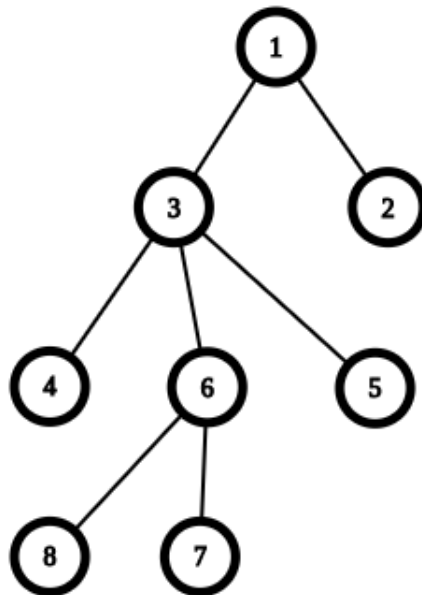| standard input	standard output
8	27
6 8	
1 2	
3 5	
1 3	
3 4	
6 7	
3 6	
3	
1 1 2 4	
1 3 1 5	
2 3	

Explanation

Figure 1: The tree in example

The tree in the example is illustrated in Figure 1.

- After the first operation vertices $\{4, 5, 6\}$ will have 4 acorns each, since these are the only vertices in the subtree of 1 which are 2 units away from vertex 1.

- After the second operation vertices $\{4, 5, 6\}$ each will have 5 acorns more, since these are the only vertices in the subtree of 3 which are 1 units away from vertex 3.

- The vertices in the subtree of $3 : \{3, 4, 5, 6, 7, 8\}$. There are total $0 + 9 + 9 + 9 + 0 + 0 = 27$ acorns.