

6056 Tree

A weighted tree is a tree where each edge is labeled with a number representing the edge's length. All lengths are positive. For each node, you have to find the maximum possible distance to any other node in the tree.

Input

The input file contains several test cases, each of them as described below.

Each test case contains the description of the tree. The first line is one integer N , $2 \leq N \leq 50000$. Each of the following $(N - 1)$ lines contains the description of the tree's edges. Each edge is described by three positive integers. The first two integers are the labels of the nodes connected by this edge, ranging from 1 to N , the third number — the length of the edge. The total length of all edges does not exceed $2^{31} - 1$. It is guaranteed that the file contains a correct description of the tree.

Output

For each test case, the output consists of exactly N lines: the k -th line contains the distance from node k ($k = 1 \dots N$) to the most distant node.

Sample Input

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

Sample Output

```
5
9
10
10
8
6
```