Christmas tree

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1.5 seconds
Memory limit:	256 megabytes

On the eve of the holiday, Arsen wanted to bring a Christmas tree home, but it turned out that they were sold out in the stores. Deciding not to give up, he went to the forest, where he cut down a large tree. However, it doesn't quite resemble the Christmas tree Arsen wanted. Therefore, he wants to transform the tree into a beautiful Christmas tree by cutting off some parts.

Formally, the tree that Arsen chopped down can be considered as a connected, weighted graph without cycles. A **Christmas tree** is considered to be a subgraph of the tree that satisfies the following conditions:

1. It has a path $v_1 - v_2 - \ldots - v_k$, called the *skeleton* of the Christmas tree. The length of the skeleton is the length of the path $v_1 - v_2 - \ldots - v_k$, calculated as the sum of the edge weights of the path.
2. All edges not belonging to the skeleton must originate from the vertices of the skeleton and are called *branches* of the Christmas tree. From each vertex v_i $(1 \leq i < k)$, exactly two branches of equal length $d_i > 0$ must originate. No branch should originate from the vertex v_k.
3. The sequence of branch lengths $d_1, d_2, \ldots, d_{k-1}$ is strictly decreasing, meaning $d_1 > d_2 > \ldots > d_{k-1}$.

Of course, Arsen wants the Christmas tree to be as tall as possible, that is, for the skeleton to be as long as possible.

Your task is to find the length of the longest possible skeleton of a Christmas tree that can be obtained from the given tree.

Help Arsen create the tallest Christmas tree to decorate his home!

Input

The first line contains a single integer n $(1 \leq n \leq 2 \cdot 10^5)$ — the number of vertices in the tree that Arsen chopped down.

Each of the next $n-1$ lines describes an edge of the tree. Edge i is denoted by three integers u_i, v_i, w_i $(1 \leq u_i, v_i \leq n,\ u_i \neq v_i,\ 1 \leq w_i \leq 10^6)$ — the labels of vertices it connects and the weight of the edge. It is guaranteed that the given edges form a tree.

Output

Output a single integer — the length of the longest possible skeleton of a Christmas tree that can be obtained from the given tree.

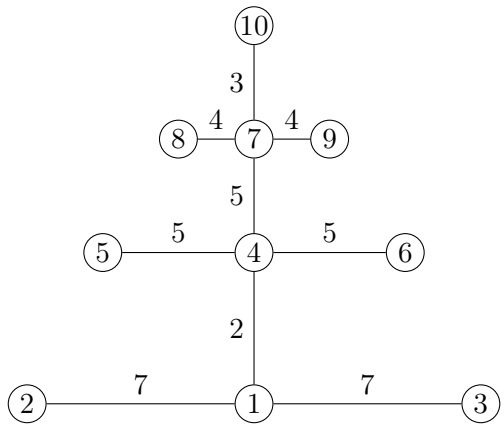
Scoring

Group	Additional constraints	Points
0	Examples	0
1	$u_i = 1, v_i = i + 1$ for all i $(1 \leq i < n)$	7
2	The given tree is a Christmas tree.	12
3	$n \leq 200$	13
4	$n \leq 5000$	14
5	$w_i = min(u_i, v_i)$ for all i $(1 \leq i < n)$	15
6	—	39

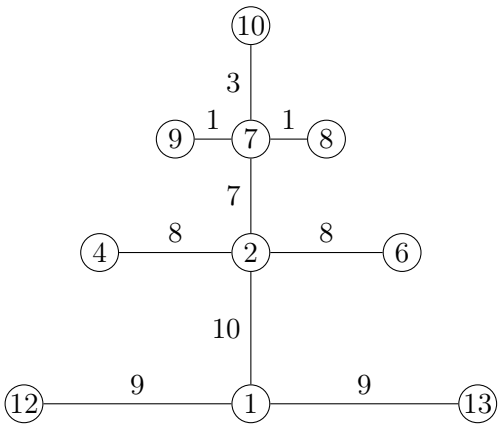
Examples

standard input	standard output
10 1 2 7 1 3 7 1 4 2 4 6 5 4 5 5 4 7 5 7 8 4 7 9 4 7 10 3	10
13 1 2 10 2 3 7 2 6 8 2 4 8 2 7 7 7 8 1 7 9 1 7 10 3 4 11 10 4 5 10 12 1 9 13 1 9	20

Note



Christmas tree for the first example



Christmas tree for the second example