An Animal Contest 1 P5 - Odd Alpacas

Time limit: 2.0s   **Memory limit:** 512M

It is a well-known fact that alpacas love numbers. The reason behind this fascination is uncertain, but that shouldn't be your concern at the moment. You've stumbled upon a herd of alpacas living in N connected villages, joined by $N - 1$ bidirectional roads of length w_i.

Let us define x as the number of even length pathways between any two villages and y as the number of odd length pathways between any two villages. The length of a pathway between u_i and v_i is defined as the sum of the road lengths connecting u_i and v_i.

You look up and find yourself face to face with the queen alpaca and she's angry. She orders you to tell her the **minimum value** of $|x - y|$ given that you can change the length of **at most** 1 road. Fail to do so and you'll be turned into an alpaca. Can you make it out alive?

Constraints

$1 \le N \le 2 \cdot 10^5$

$1 \le w_i \le 10^4$

$1 \le u_i, v_i \le N$

Subtask 1 [10%]

$1 \le N \le 200$

Subtask 2 [20%]

$1 \le N \le 2 \cdot 10^3$

Subtask 3 [70%]

No additional constraints.

Input Specification

The first line of input will contain the integer N, the number of villages.

The next $N - 1$ lines will contain the integers u_i, v_i, and w_i, representing a bidirectional road between u_i and v_i that is w_i units long.

Output Specification

Output the minimal possible value of $|x - y|$ after modifying the length of **at most** one edge.

Note that 64-bit integers may be required.

Sample Input 1

```
5
5 3 97
4 2 21
1 2 49
3 2 4
```

Sample Output 1

```
2
```

Explanation for Sample Output 1

An optimal solution is **not** changing any lengths.

In the original graph, there are 6 pairs of villages which form a path of **odd** length:

- $(1, 2)$ of length 49.
- $(1, 3)$ of length 53.
- $(2, 4)$ of length 21.
- $(2, 5)$ of length 101.
- $(3, 4)$ of length 25.
- $(3, 5)$ of length 97.

Furthermore, there are 4 pairs of villages which form a path of **even** length.

- $(1, 4)$ of length 70.
- $(1, 5)$ of length 150.
- $(2, 3)$ of length 4.
- $(4, 5)$ of length 122.

Thus, the answer is $|6 - 4| = 2$.

Sample Input 2

```
6
6 1 100
2 1 86
4 3 12
3 2 40
5 2 44
```

Sample Output 2

```
1
```