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The xor-longest Path

Language: ▾

Time Limit: 2000MS **Memory Limit:** 65536K
Total Submissions: 7214 **Accepted:** 1536

Description

In an edge-weighted tree, the xor-length of a path p is defined as the xor sum of the weights of edges on p :

Error!

\oplus is the xor operator.

We say a path the xor-longest path if it has the largest xor-length. Given an edge-weighted tree with n nodes, can you find the xor-longest path?

Input

The input contains several test cases. The first line of each test case contains an integer $n(1 \leq n \leq 100000)$, The following $n-1$ lines each contains three integers $u(0 \leq u < n), v(0 \leq v < n), w(0 \leq w < 2^{31})$, which means there is an edge between node u and v of length w .

Output

For each test case output the xor-length of the xor-longest path.

Sample Input

4
0 1 3
1 2 4
1 3 6

Sample Output

7

Hint

The xor-longest path is 0->1->2, which has length 7 ($=3 \oplus 4$)

Source

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