The xor-longest Path

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<=n<=100000), The following n-1 lines each contains three integers u(0 <= u < n),v(0 <= v < n),w(0 <= 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 ⊕ 4)

Source

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