Problem I. $N-1$ Truths and a Lie

- Time Limit: 2 sec

Problem Statement

You are playing "$N-1$ Truths and a Lie" game. In this game, N people say facts about some topic. Each of the $N-1$ people says a true fact but the other person says a lie. You win if you identify who is a liar from the facts they said.

This time, the topic of the game is the heights of K mountains, numbered 1 through K. Among N people, the i-th person says "mountain a_i is x_i meters higher than mountain b_i". If you exclude a specific liar from N people, the facts that the other $N-1$ people say have no contradiction. On the other hand, if you exclude a person who is not a liar, the facts that the other $N-1$ people say must contradict.

Your task is to write a program to identify who is a liar among N people from the facts they said.

Input

The first line consists of two integers, the number N ($2 \leq N \leq 200{,}000$) of people and the number K ($3 \leq K \leq 200{,}000$) of mountains. The following N lines represent facts that N people say. The i-th line contains three integers a_i ($1 \leq a_i \leq K$), b_i ($1 \leq b_i \leq K$), and x_i ($1 \leq x_i \leq 10^9$), which represent the i-th person says mountain a_i is x meters higher than mountain b_i. You can assume $a_i \neq b_i$. Also, you can assume $(a_i, b_i) \neq (a_j, b_j)$ and $(a_i, b_i) \neq (b_j, a_j)$ hold for all $1 \leq i < j \leq N$. The input is consistent with the situation where there is exactly one liar.

Output

Output in a line a single integer i, where the i-th person is a liar.

Sample Input 1

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

Sample Output 1

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3
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Sample Input 2

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8 5
1 2 4
2 3 1
4 3 2
1 4 3
1 5 1
4 5 7
5 2 3
5 3 4
```

Sample Output 2

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6
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