

## Problem L. Liar Game

Input file: *standard input*  
Output file: *standard output*  
Time limit: 1 second  
Memory limit: 1024 mebibytes

You are playing the game “Liar, Liar”. In this game,  $N$  people say facts about some topic:  $N - 1$  people tell true facts, and the remaining person tells a lie. You win if you identify who is the 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 the 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 the 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 mean that the  $i$ -th person says “mountain  $a_i$  is  $x_i$  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  $(b_i, a_i) \neq (b_j, a_j)$  hold for all  $1 \leq i < j \leq N$ . The input is consistent with the situation where there is exactly one liar.

### Output

Output a line with a single integer  $i$  which means the  $i$ -th person is the liar.

### Examples

<i>standard input</i>	<i>standard output</i>
5 4 2 1 2 2 3 2 2 4 3 1 4 2 3 4 2	3
8 5 1 3 4 3 2 1 4 2 2 1 4 3 1 5 1 4 5 7 5 3 3 5 2 4	6