1249 – Chocolate Thief

I gave some chocolates to students for their extraordinary performances. A chocolate is a cube shaped thing, which has length, width and height. All the students got the same amount of chocolates; their dimensions may be different but the volumes are same.

Now some of the students are claiming that there is one chocolate thief amongst them. So, it's not an easy task for me to find the chocolate thief, so I am asking your help.

You are given the names of the students and the dimensions of their chocolates; you have to find the name of the chocolate thief. You can assume that there can be at most one thief and if there is a thief, he took some portion of the chocolate from another student (not students).

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case starts with a line containing an integer **n (2 ≤ n ≤ 100)** denoting the number of students. Each of the next **n** lines contains a name and three integers denoting the length, width and height of his current chocolate share. Names are strings containing alphanumeric characters and the length of a name is between **1** and **20**. And length, width and height will lie in the range **[1, 100]**. Input follows the above restrictions.

Output

For each case, print the case number first. Then if no thief is found, print **'no thief'**. Otherwise print **'x took chocolate from y'** where **x** is the name of the chocolate thief, and **y** is the name of the person from whom the chocolate was taken.

Sample Input	Output for Sample Input
2 11 atq 3 4 3 mun 10 4 1 sam1 6 6 1 sam2 18 2 1 mub 1 36 1 tan 1 4 9 sha 4 3 3 di 3 12 1 nab 2 2 9 all 8 4 1 fah 3 2 6 2 ja 10 10 10 em 2 50 10	Case 1: mun took chocolate from all Case 2: no thief