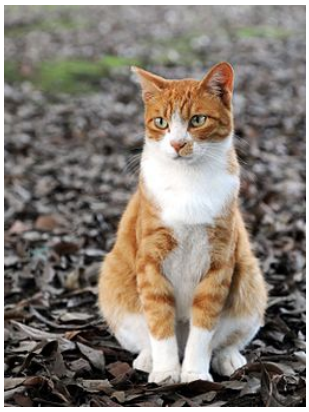
Problem F
Fair Bandwidth Sharing
Problem ID: fairbandwidthsharing


Orange tabby cat.

Dreaming of revolutionizing the tech industry and making the world a better place, Ging has recently moved to Silicon Valley to found his own startup, Katbook.

Katbook allows users to download cat pictures. Katbook is capable of transferring t bits per second.

There are n species of cats, numbered from 1 to n. There is a demand ratio d_i for the pictures of the i-th species. This means, if there is no further restrictions, the i-th cat species should have a 'fair share' of $\frac{d_i}{\sum_{j=1}^{n} d_j}$ fraction of the total bandwidth t.

However, because of infrastructure limitations, the bandwidth for the i-th species must be between a_i and b_i.

You are newly hired by Ging as a network engineer at Katbook. Your first task is to find the most 'fair' bandwidth allocation satisfying the above constraints. More formally, let x_i be the bandwidth allocated for downloading pictures of the i-th species. You must find x_i such that:

- $a_i \le x_i \le b_i$,
- $\sum_{i=1}^{n} x_i = t$,
- Let $y_i = t \cdot \frac{d_i}{\sum_{j=1}^{n} d_j}$ (y_i is the 'fair share' bandwidth, if there was no constraints regarding a_i and b_i), the value $\sum_{i=1}^{n} \frac{(x_i - y_i)^2}{y_i}$ should be as small as possible.

Input

The first line of input contains 2 integers n and t ($1 \le n \le 10^5, 1 \le t \le 10^6$).

In the next n lines, the i-th line contains 3 integers a_i, b_i and d_i ($0 \le a_i \le b_i \le 10^6, 0 < b_i, 1 \le d_i \le 10^6$).

It is guaranteed that there exists at least one valid solution.

It can be shown that under these constraints, the solution is unique.

Output

Output n lines, each line contains the allocation for downloading pictures of the i-th species. The answer will be accepted if and only if its relative or absolute error to the optimal solution is at most 10^{-6}.

Formally, for each line, let your answer be a, and the jury's answer be b. Your answer is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Explanation of Sample input

In the first sample, each cat species has its 'fair share' of $\frac{1}{3}$ of the whole bandwidth.

In the second sample, note that the cat species 1 has much more demand and could get almost all of the available bandwidth if not for its maximum to be capped at 1. The rest is divided with ratio $2:1$, hence the cat species 2 gets 6 bits per second and the cat species 3 gets 3 bits per second.

Sample Input 1	Sample Output 1
3 10 0 10 1 0 10 1 0 10 1	3.33333333 3.33333333 3.33333333

Sample Input 2	Sample Output 2
3 10 0 1 1000 2 8 2 2 8 1	1.00000000 6.00000000 3.00000000