Moorathon

In interest of raising Farmer John's income during the COWVID-19 pandemic, Farmer John has decided to register his N cows ($1 \leq N \leq 10^5$) cows have decided to participate in the Bovine Olympics. One of the events in the Bovine Olympics is the renowned Moorathon, which has the highest reward of all the events.

Here are some important details regarding the rules of the Moorathon:

- The Moorathon is a team sport where all N of Farmer John's cows must participate; otherwise, Farmer John and his cows will be **disqualified**.
- The Moorathon runs across a pasture of length M miles ($1 \leq M \leq 10^9$).
- A team of cows finishes the marathon if the sum of the distances for all of Farmer John's cows covers the length of the pasture (the sum of the distances of all cows must be M miles).
- Note: if a cow has finishes the marathon for the team, then the cow immediately stops racing.

Each of Farmer John's cows are described by t_i, d_i, w_i, where $t_i (1 \leq t_i \leq 10^9)$ represents the time it takes in minutes for cow i to travel a single mile. Cow i runs a total of $d_i (1 \leq d_i \leq 10^9)$ miles before taking a "grass-eating" break for $w_i (0 \leq w_i \leq 10^9)$ minutes in which cow i stays occupied in her current position.

Since Farmer John is interested in getting receiving the prize money, please help him compute the minimum time X for Farmer John's cows to complete the marathon. Additionally, please print the total distance traveled by a given cow i.

INPUT FORMAT (input arrives from the terminal / stdin):

The first line of input contain the integers N and M.

The next N lines of input contain three space-separated integers t_i, d_i, w_i, respectively.

OUTPUT FORMAT (print output to the terminal / stdout):

On the first line, please print X. On the next N lines, please print the total distance traveled by cow i.

Note that the large size of integers involved in this problem may require the use of 64-bit integer data types (e.g., a "long long" in C/C++).

SAMPLE INPUT:

```
3 5
3 2 1
2 3 0
1 1 1
```

SAMPLE OUTPUT:

```
4
1 2 2
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In this example, cow 1 ran a total of one mile in four minutes, cow 2 ran a total of two miles in four minutes, and cow 3 ran a total of 2 miles in four minutes.

Problem credits: Jesse Choe