CSE 462

Offline 2

Submission:25/11/2018, 11:55pm

Suppose you want to repaint your house entirely for an upcoming occasion. The total area of your house is **D** units. There are a total of **N** workers. The **i^{th}** worker has his available time **T_i**, hiring cost **X_i** and speed **Y_i**. This means that he is available for hiring from time **T_i** and remains available ever since. Once available, you can hire him with cost **X_i**, after which he will start painting the house immediately, covering exactly **Y_i** units of house with paint per time unit. You may or may not hire a worker and can also hire or fire him at any later point of time. However, no more than **1** worker can be painting the house at a given time.

Since you want the work to be done as fast as possible, figure out a way to hire the workers, such that your house gets painted at the earliest possible time, with minimum cost to spend for hiring workers.

Note: You can hire a previously hired worker without paying him again.

INPUT

The first line of input contains two integers **"N D"**, the number of workers and the area of your house respectively. The **i^{th}** of the next **N** lines denotes the **i^{th}** worker, and contains three integers "**T_i X_i Y_i**", described in the statement.

OUTPUT

Output one integer, the minimum cost that you can spend in order to get your house painted at the earliest.

SAMPLE INPUT

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

SAMPLE OUTPUT

```
3
```

Explanation

We can hire the first worker at cost of 1 and second at cost of 2, to finish painting at the minimum time of exactly 2 time units.

Report: Contains pseudo-code, proof of correctness, complexity analysis, f(N) and plot of time against N (to see if the trend matches your claimed running time) .