ETH Zurich
Institut für Theoretische Informatik
Prof. Dr. Angelika Steger
Prof. Dr. Emo Welzl
Prof. Dr. Peter Widmayer

HS 2012
Exercise Sheet ACM Week II

Algorithms Lab

Exercise 4 – *Demolition*

Description The first rule of Fight Club is: You do not talk about Fight Club. The second rule of Fight Club is: You do not talk about Fight Club...

As your next duty in Fight Club (led by Tyler Durden and Edward Norton), you have been assigned to the project Mayhem. What is the project Mayhem? Well, one simply does not speak of it, and one does not have a name once one becomes part of it. Anyhow, to make a long story short, your next mission in the project Mayhem is to demolish a building.

The building you want to demolish has n floors, and for each floor you know how much weight it can carry before it collapses, its current weight and how much it would cost to blow it up. There are two ways for a floor to collapse. Firstly, it can be simply blown up at a given cost. It can also collapse under excessive weight, i.e., if the total weight of the current floor and all the debris that fell on it from the previous collapses strictly exceeds its capacity. Whenever a floor collapses, all of its weight and all the debris lying on it fall down onto the floor below. The most important part of the building is the ground floor, and the whole building breaks down once it collapses. Thus, your goal is to destroy the ground floor. However, as the budget of the project Mayhem is a bit short these days, you have to do it as efficiently as possible!

Input The first line of the input contains $t \leq 5$, the number of testcases. Each test case starts with one line containing the number of floors $1 \leq n \leq 100000$, followed by n lines, specifying characteristics of the floors from bottom to top. Each of these n lines contains three positive integers which describe the current weight, total capacity and the cost of blowing up the i-th floor (in that order, weight $\leq$ capacity). All integers are in the interval $[0, 2^{31})$.

Output For each test case you should output a line containing the minimum cost of destroying the building.

Sample input

```
2
3
5 10 100
5 10 1
5 10 1
5
2 20 20
10 15 15
20 30 5
8 16 1
4 20 50
```

Sample output

```
2
5
```