beCP
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Task 1.3: Cinephilia (movies)

Author & Preparation: Bruno Ploumhans

Time limit: 3 s   Memory limit: 1024 MB

You just discovered the current schedule of your favorite movie theater, and you would like to watch as many movies as possible. Each movie is different, so ideally you would attend all the screenings, but two problems arise:

- Some screenings overlap, and you will have to make a choice. To simplify this decision, you established a score for each movie.
- You love movies, but you also need sleep, otherwise you risk falling asleep in front of the screen despite you being there to witness the genius of the director. The level of attention required depends on the movie you are going to see: a David Lynch movie is more demanding than the latest *Avengers*, for example.

The schedule of your movie theater contains M movies. For each movie, you know:

- b_i and e_i, the start and end times of the movie respectively;
- s_i, the score you gave to the movie; and
- a_i, the amount of attention the movie requires. You must have at least a_i of attention as you enter the room to watch this movie, and after watching it you will have lost a_i attention.

At time 0, you are at the movie theater, with your maximum attention level A. You can :

- Immediately join a screening that starts, if your attention level allows it.
- Wait in the hall of the movie theater until the next screening. This does not change your attention level.
- Go home to rest to regain your maximum attention level A. It takes T minutes to go home, rest, and come back to the movie theater.

Once a screening is over, you can immediately join another screening that starts, wait in the movie theater, or go home to rest.

Maximize your total score, that is, the sum of the scores of the movies you will watch.

Input

The first line contains three integers M, A, and T: the number of movies, your maximum attention level, and the number of minutes it takes you to go home, rest, and come back to the movie theater.

Each of the next M lines contains four integers b_i, e_i, s_i, and a_i describing a movie: the start and end of the movie (in minutes), the score you gave to the movie, and the amount of attention the movie requires, respectively.

Output

Print a single number : the maximum score that you can achieve while respecting the time and sleep constraints.

General limits

- $1 \leq M \leq 5000$, the number of movies.
- $1 \leq A \leq 10^4$, your maximum attention level.
- $1 \leq T \leq 10^8$, the number of minutes it takes you to go home, rest, and come back to the movie theater.
- $0 \leq b_i < e_i \leq 10^9$, the start and end minutes of the i-th movie.
- $1 \leq s_i \leq 10^5$, the score you gave to the i-th movie.
- $1 \leq a_i \leq A$, the attention level required by the i-th movie.
- The movies are sorted by their start time: $b_i \leq b_{i+1}$.

Additional constraints

Subtask	Points	Constraints
A	30	$M \leq 20$.
B	20	You have enough attention to watch all the movies: $\sum_{i=0}^{M-1} a_i \leq A$.
C	20	$M \leq 200$.
D	30	No additional constraint.

Example 1

sample1.in
```
2 5 5
0 60 10 2
60 100 10 2
```

sample1.out
```
20
```

By watching the two movies in a row, you reach a score of $10 + 10 = 20$.

This example is valid for all subtasks.

Example 2

sample2.in
```
3 5 80
0 100 4 3
100 200 2 1
200 300 3 5
```

sample2.out
```
7
```

The best strategy is as follows:

- Watch the first movie: 100 minutes. After the screening, you have $5 - 3 = 2$ attention left.
- Go home to rest: 80 minutes. You are back to $A = 5$ attention.
- Wait for the third movie to start: 20 minutes. Your attention does not decrease during this wait.
- Watch the third movie. After the screening, you have $5 - 5 = 0$ attention left.

This way, you reach a score of $4 + 3 = 7$.

This example is valid for subtasks A, C and D.