Back To School '18: The Golden Porcupine

Time limit: 0.6s **Memory limit:** 64M
Java: 1.0s

Ohani was tired of sitting in a mall, watching people hold hands. He hates public displays of affection (PDA). So, he decided to take a walk. He was walking through a magical forest when he came across a porcupine. He noticed that the porcupine's body was completely made of gold. The porcupine said:

Over a period of T seconds, I will shoot N quills out in total. The i^{th} quill exists only between the L_i^{th} and R_i^{th} seconds (inclusive).

The height of the i^{th} can be expressed as $a_i x^2 + b_i x + c_i$, where a_i, b_i, and c_i are constants for the i^{th} quill and x is the number of seconds the quill has been in the air. For the i^{th} quill, at time L_i, $x = 0$.

These quills have magical gravity and pass through anything, so it's perfectly fine for a_i to be more than 0 or the height of a quill to be less than 0 at any point in time.

Can you tell me the sum of the heights of all the quills at each second in time between 1 and T inclusive?

Ohani was able to solve the problem and get home **just in** time to play with legos with his brother. Ohani loves legos, and his brother is a lego lover too.

Input Specification

The first line will contain two integers, N, T $(1 \leq N \leq 10^5, 1 \leq T \leq 10^5)$.

The next N lines will each contain five integers, L_i, R_i, a_i, b_i, c_i $(1 \leq L_i \leq R_i \leq T, 0 \leq |a_i|, |b_i|, |c_i| \leq 10^3)$.

Output Specification

Print T integers on one line, the t^{th} integer representing the sum of heights of quills at the t^{th} $(1 \leq t \leq T)$ second in time.

Constraints

Subtask 1 [1%]

$T = 1$

Subtask 2 [4%]

$N, T \leq 1\,000$

Subtask 3 [5%]

$L_i = 1, R_i = T$

Subtask 4 [20%]

$a_i = 1, b_i = 1$

Subtask 5 [70%]

No additional constraints.

Sample Input

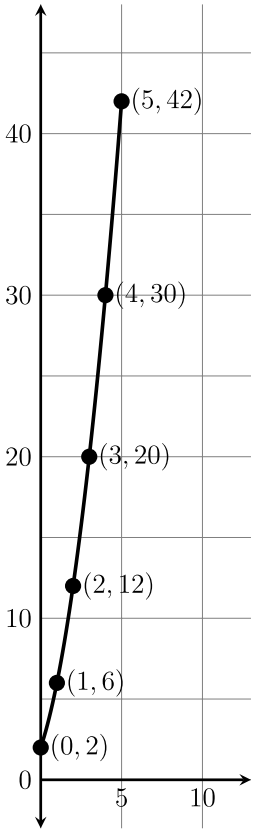
```
2 6
1 6 1 3 2
3 4 2 2 -200
```

Sample Output

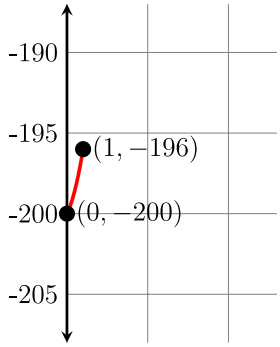
```
2 6 -188 -176 30 42
```

Explanation of Sample Output

The first quill's trajectory is shown as follows:



The second quill's trajectory is shown as follows:



At the 1^{st} second, the sum of the heights is only quill 1 at $x = 0$ as quill 2 does not exist yet (2).

At the 2^{nd} second, the sum of the heights is only quill 1 at $x = 1$ as quill 2 does not exist yet (6).

At the 3^{rd} second, the sum of the heights is quill 1 at $x = 2$ and quill 2 at $x = 0$ $(12 + (-200) = -188)$.

At the 4^{th} second, the sum of the heights is quill 1 at $x = 3$ and quill 2 at $x = 1$ $(20 + (-196) = -176)$.

At the 5^{th} second, the sum of the heights is only quill 1 at $x = 4$ as quill 2 no longer exists (30).

At the 6^{th} second, the sum of the heights is only quill 1 at $x = 5$ as quill 2 no longer exists (42).