## Foehn Phenomena

In the Kingdom of IOI, the wind always blows from sea to land. There are $N+1$ spots numbered from 0 to $N$. The wind from Spot 0 to $\operatorname{Spot} N$ in order. Mr. JOI has a house at $\operatorname{Spot} N$. The altitude of $\operatorname{Spot} 0$ is $A_{0}=0$, and the altitude of Spot $i(1 \leq i \leq N)$ is $A_{i}$.

The wind blows on the surface of the ground. The temperature of the wind changes according to the change of the altitude. The temperature of the wind at Spot 0 , which is closest to the sea, is 0 degree. For each $i(0 \leq i \leq$ $N-1$ ), the change of the temperature of the wind from Spot $i$ to Spot $i+1$ depends only on the values of $A_{i}$ and $A_{i+1}$ in the following way:

- If $A_{i}<A_{i+1}$, the temperature of the wind decreases by $S$ degrees per altitude.
- If $A_{i} \geqq A_{i+1}$, the temperature of the wind increases by $T$ degrees per altitude.

The tectonic movement is active in the land of the Kingdom of IOI. You have the data of tectonic movements for $Q$ days. In the $j$-th $(1 \leq j \leq Q)$ day, the change of the altitude of $\operatorname{Spot} k$ for $L_{j} \leq k \leq R_{j}\left(1 \leq L_{j} \leq R_{j} \leq N\right)$ is described by $X_{j}$. If $X_{j}$ is not negative, the altitude increases by $X_{j}$. If $X_{j}$ is negative, the altitude decreases by $\left|X_{j}\right|$.

Your task is to calculate the temperature of the wind at the house of Mr. JOI after each tectonic movement.

## Task

Given the data of tectonic movements, write a program which calculates, for each $j(1 \leq j \leq Q)$, the temperature of the wind at the house of Mr. JOI after the tectonic movement on the $j$-th day.

## Input

Read the following data from the standard input.

- The first line of input contains four space separated integers $N, Q, S, T$. This means there is a house of Mr. JOI at Spot $N$, there are $Q$ tectonic movements, the temperature of the wind decreases by $S$ degrees per altitude if the altitude increases, and the temperature of the wind increases by $T$ degrees per altitude if the altitude decreases.
- The $i$-th line $(1 \leq i \leq N+1)$ of the following $N+1$ lines contains an integer $A_{i-1}$, which is the initial altitude at $\operatorname{Spot}(i-1)$ before tectonic movements.
- The $j$-th line $(1 \leq j \leq Q)$ of the following $Q$ lines contains three space separated integers $L_{j}, R_{j}, X_{j}$. This means, for the tectonic movement on the $j$-th day, the change of the altitude at the spots from $L_{j}$ to $R_{j}$ is described by $X_{j}$.

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## Output

Write $Q$ lines to the standard output. The $j$-th line $(1 \leq j \leq Q)$ of output contains the temperature of the wind at the house of Mr. JOI after the tectonic movement on the $j$-th day.

## Constraints

All input data satisfy the following conditions.

- $1 \leq N \leq 200000$.
- $1 \leq Q \leq 200000$.
- $1 \leq S \leq 1000000$.
- $1 \leq T \leq 1000000$.
- $A_{0}=0$.
- $-1000000 \leq A_{i} \leq 1000000(1 \leq i \leq N)$.
- $1 \leq L_{j} \leq R_{j} \leq N(1 \leq j \leq Q)$.
- $-1000000 \leq X_{j} \leq 1000000(1 \leq j \leq Q)$.


## Subtask

## Subtask 1 [30 points]

The following conditions are satisfied.

- $N \leq 2000$.
- $Q \leq 2000$.


## Subtask 2 [10 points]

- $S=T$.


## Subtask 3 [60 points]

There are no additional constraints.

## Sample Input and Output

| Sample Input 1 | Sample Output 1 |  |
| :--- | :--- | :--- |
| 3 | 5 | 1 |
| 0 |  | -5 |
| 4 |  | -7 |
| 1 |  | -13 |
| 8 |  | -13 |
| 1 | 2 | 2 |
| 1 | 1 | -2 |
| 2 | 3 | 5 |
| 1 | 2 | -1 |
| 1 | 3 | 5 |

Initially, the altitudes of the Spot $0,1,2,3$ are $0,4,1,8$, respectively. After the tectonic movement on the first day, the altitudes become $0,6,3,8$, respectively. At that moment, the temperatures of the wind are $0,-6,0,-5$, respectively.

| Sample Input 2 | Sample Output 2 |
| :--- | :--- |
| 2 | 2 |
| 0 | 5 |
| 6 |  |
| -1 | -35 |
| 1 | 1 | $4 \quad 4$

This sample input satisfies the constraints of Subtask 2.

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| Sample Input 3 | Sample Output 3 |
| :---: | :---: |
| 78813 | 277 |
| 0 | 277 |
| 4 | 322 |
| -9 | 290 |
| 4 | 290 |
| -2 | 290 |
| 3 | 290 |
| 10 | 370 |
| -9 |  |
| 148 |  |
| $\begin{array}{llll}3 & 5 & -2\end{array}$ |  |
| 339 |  |
| 174 |  |
| $\begin{array}{llll}3 & 5 & -1\end{array}$ |  |
| 563 |  |
| 449 |  |
| $67-10$ |  |

