C. Alyona and towers

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Alyona has built n towers by putting small cubes some on the top of others. Each cube has size $1 \times 1 \times 1$. A tower is a non-zero amount of cubes standing on the top of each other. The towers are next to each other, forming a row.

Sometimes Alyona chooses some segment towers, and put on the top of each tower several cubes. Formally, Alyouna chooses some segment of towers from l_i to r_i and adds d_i cubes on the top of them.

Let the sequence $a_1, a_2, ..., a_n$ be the heights of the towers from left to right. Let's call as a segment of towers $a_l, a_{l+1}, ..., a_r$ a hill if the following condition holds: there is integer k ($l \le k \le r$) such that $a_l < a_{l+1} < a_{l+2} < ... < a_k > a_{k+1} > a_{k+2} > ... > a_r$.

After each addition of d_i cubes on the top of the towers from l_i to r_i, Alyona wants to know the maximum width among all hills. The width of a hill is the number of towers in it.

Input

The first line contain single integer n ($1 \le n \le 3 \cdot 10^5$) — the number of towers.

The second line contain n integers $a_1, a_2, ..., a_n$ ($1 \le a_i \le 10^9$) — the number of cubes in each tower.

The third line contain single integer m ($1 \le m \le 3 \cdot 10^5$) — the number of additions.

The next m lines contain 3 integers each. The i-th of these lines contains integers l_i, r_i and d_i ($1 \le l \le r \le n$, $1 \le d_i \le 10^9$), that mean that Alyona puts d_i cubes on the tio of each of the towers from l_i to r_i.

Output

Print m lines. In i-th line print the maximum width of the hills after the i-th addition.

Example

input
5 5 5 5 5 5 3 1 3 2 2 2 1 4 4 1

output
2 4 5

Note

The first sample is as follows:

After addition of 2 cubes on the top of each towers from the first to the third, the number of cubes in the towers become equal to $[7, 7, 7, 5, 5]$. The hill with maximum width is $[7, 5]$, thus the maximum width is 2.

After addition of 1 cube on the second tower, the number of cubes in the towers become equal to $[7, 8, 7, 5, 5]$. The hill with maximum width is now $[7, 8, 7, 5]$, thus the maximum width is 4.

After addition of 1 cube on the fourth tower, the number of cubes in the towers become equal to $[7, 8, 7, 6, 5]$. The hill with maximum width is now $[7, 8, 7, 6, 5]$, thus the maximum width is 5.