

## E. 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, Alyona chooses some segment of towers from  $l_i$  to  $r_i$  and adds  $d_i$  cubes on the top of them.

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

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  $n$  ( $1 \leq n \leq 3 \cdot 10^5$ ) — the number of towers.

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

The third line contain single integer  $m$  ( $1 \leq m \leq 3 \cdot 10^5$ ) — 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  $d_i$  ( $1 \leq l \leq r \leq n$ ,  $1 \leq d_i \leq 10^9$ ), that mean that Alyona puts  $d_i$  cubes on the top 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.