A. Circular RMQ

time limit per test: 1.5 seconds
memory limit per test: 256 megabytes

You are given circular array $a_0, a_1, ..., a_{n-1}$. There are two types of operations with it:

- $inc(lf, rg, v)$ — this operation increases each element on the segment $[lf, rg]$ (inclusively) by v;
- $rmq(lf, rg)$ — this operation returns minimal value on the segment $[lf, rg]$ (inclusively).

Assume segments to be circular, so if $n = 5$ and $lf = 3, rg = 1$, it means the index sequence: $3, 4, 0, 1$.

Write program to process given sequence of operations.

Input

The first line contains integer n ($1 \le n \le 200000$). The next line contains initial state of the array: $a_0, a_1, ..., a_{n-1}$ ($-10^6 \le a_i \le 10^6$), a_i are integer. The third line contains integer m ($0 \le m \le 200000$), m — the number of operartons. Next m lines contain one operation each. If line contains two integer lf, rg ($0 \le lf, rg \le n-1$) it means rmq operation, it contains three integers lf, rg, v ($0 \le lf, rg \le n-1$; $-10^6 \le v \le 10^6$) — inc operation.

Output

For each rmq operation write result for it. Please, do not use `%lld` specificator to read or write 64-bit integers in C++. It is preffered to use `cout` (also you may use `%I64d`).

Examples

input Copy

```
4
1 2 3 4
4
3 0
3 0 -1
0 1
2 1
```

output Copy

```
1
0
0
```

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