E. Yaroslav and Points

time limit per test: 5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Yaroslav has n points that lie on the Ox axis. The coordinate of the first point is x_1, the coordinate of the second point is x_2, ..., the coordinate of the n-th point is — x_n. Now Yaroslav wants to execute m queries, each of them is of one of the two following types:

1. Move the p_j-th point from position x_{p_j} to position $x_{p_j} + d_j$. At that, it is guaranteed that after executing such query all coordinates of the points will be distinct.
2. Count the sum of distances between all pairs of points that lie on the segment $[l_j, r_j]$ $(l_j \le r_j)$. In other words, you should count the sum of: .

Help Yaroslav.

Input

The first line contains integer n — the number of points $(1 \le n \le 10^5)$. The second line contains distinct integers $x_1, x_2, ..., x_n$ — the coordinates of points $(|x_i| \le 10^9)$.

The third line contains integer m — the number of queries $(1 \le m \le 10^5)$. The next m lines contain the queries. The j-th line first contains integer t_j $(1 \le t_j \le 2)$ — the query type. If $t_j = 1$, then it is followed by two integers p_j and d_j $(1 \le p_j \le n, |d_j| \le 1000)$. If $t_j = 2$, then it is followed by two integers l_j and r_j (- $10^9 \le l_j \le r_j \le 10^9$).

It is guaranteed that at any moment all the points have distinct coordinates.

Output

For each type 2 query print the answer on a single line. Print the answers in the order, in which the queries follow in the input.

Please, do not use the `%lld` specifier to read or write 64-bit integers in *C++*. It is preferred to use the `cin`, `cout` streams of the `%I64d` specifier.

Examples

input

```
8
36 50 28 -75 40 -60 -95 -48
20
2 -61 29
1 5 -53
1 1 429
1 5 130
2 -101 -71
2 -69 53
1 1 404
1 5 518
2 -101 53
2 50 872
1 1 -207
2 -99 -40
1 7 -389
1 6 -171
1 2 464
1 7 -707
1 1 -730
1 1 560
2 635 644
1 7 -677
```

output

```
176
20
406
1046
1638
156
0
```