Problem G. Kuriyama Mirai's Stones

Time limit 2000 ms
Mem limit 262144 kB

Kuriyama Mirai has killed many monsters and got many (namely n) stones. She numbers the stones from 1 to n. The cost of the i-th stone is v_i. Kuriyama Mirai wants to know something about these stones so she will ask you two kinds of questions:

1. She will tell you two numbers, l and r $(1 \le l \le r \le n)$, and you should tell her $\sum_{i=l}^{r} v_i$.
2. Let u_i be the cost of the i-th cheapest stone (the cost that will be on the i-th place if we arrange all the stone costs in non-decreasing order). This time she will tell you two numbers, l and r $(1 \le l \le r \le n)$, and you should tell her $\sum_{i=l}^{r} u_i$.

For every question you should give the correct answer, or Kuriyama Mirai will say "fuyukai desu" and then become unhappy.

Input

The first line contains an integer n $(1 \le n \le 10^5)$. The second line contains n integers: $v_1, v_2, ..., v_n$ $(1 \le v_i \le 10^9)$ — costs of the stones.

The third line contains an integer m $(1 \le m \le 10^5)$ — the number of Kuriyama Mirai's questions. Then follow m lines, each line contains three integers *type*, l and r $(1 \le l \le r \le n;\ 1 \le type \le 2)$, describing a question. If *type* equal to 1, then you should output the answer for the first question, else you should output the answer for the second one.

Output

Print m lines. Each line must contain an integer — the answer to Kuriyama Mirai's question. Print the answers to the questions in the order of input.

Sample 1

Input	Output
6 6 4 2 7 2 7 3 2 3 6 1 3 4 1 1 6	24 9 28

Sample 2

Input	Output
4 5 5 2 3 10 1 2 4 2 1 4 1 1 1 2 1 4 2 1 2 1 1 1 1 3 3 1 1 3 1 4 4 1 2 2	10 15 5 15 5 5 2 12 3 5

Note

Please note that the answers to the questions may overflow 32-bit integer type.