

Problem P. 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 ($1 \leq l \leq r \leq n$), 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 ($1 \leq l \leq r \leq n$), 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 ($1 \leq n \leq 10^5$). The second line contains n integers:

v_1, v_2, \dots, v_n ($1 \leq v_i \leq 10^9$) — costs of the stones.

The third line contains an integer m ($1 \leq m \leq 10^5$) — the number of Kuriyama Mirai's questions. Then follow m lines, each line contains three integers $type, l$ and r ($1 \leq l \leq r \leq n; 1 \leq type \leq 2$), 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 | 24 |
| 6 4 2 7 2 7 | 9 |
| 3 | 28 |
| 2 3 6 | |
| 1 3 4 | |
| 1 1 6 | |

Sample 2

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

Note

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