

Problem H. 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 6 4 2 7 2 7 3 2 3 6 1 3 4 1 1 6	24 9 28

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.