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.

INPUT : n , n integers $(v_1, \dots, v_n)$

m = questions

↳ m lines ⇒ 3 enteros 1, 2 Type , L , R

n piedras C/piedra i tiene costo v_i

L, R ⇒ $1 \le L \le R \le n$ ⇒ $\sum_{i=L}^{R} v_i$

v_i costo de la i-esima piedra mas barata

(El costo que estaria en el i-esimo lugar si se ordena de forma creciente

L, R ⇒ $1 \le L \le R \le n$ ⇒ $\sum_{i=L}^{R} u_i$

input

```
6
6 4 2 7 2 7
3
2 3 6
1 3 4
1 1 6
```

6 → cantidad de piedras

6 4 2 7 2 7 → valor de c/ piedra

3 → cantidad de preguntas

2 3 6 → tipo de pregunta

L

A

output

```
24
9
28
```

2 → tipo 2 (sumatoria entre 3 y 6) de valores más chicos =>

[2, 2, 4, 6, 7, 7] => 4 + 6 + 7 + 7 = 24

1 2 3 4 5 6

[6, 4, 2, 7, 2, 7] => 2 + 7 = 9

1 2 3 4 5 6

6 + 4 + 2 + 7 + 2 + 7 = 24 + 2 + 2 = 28