B. Kuriyama Mirai's Stones

time limit per test

2 seconds

memory limit per test

256 megabytes

input

standard input

output

standard output

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 *vi*. 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 ≤ *l* ≤ *r* ≤ *n*), and you should tell her http://espresso.codeforces.com/6a950b27de2103bb53df10f9ace817ae3df57fa9.png.
2. Let *ui* 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 ≤ *l* ≤ *r* ≤ *n*), and you should tell her http://espresso.codeforces.com/9830c0af1b3d14c66843c32f7c106c97428b7d2d.png.

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 ≤ *n* ≤ 105). The second line contains *n* integers: *v*1, *v*2, ..., *vn* (1 ≤ *vi* ≤ 109) — costs of the stones.

The third line contains an integer *m* (1 ≤ *m* ≤ 105) — the number of Kuriyama Mirai's questions. Then follow *m* lines, each line contains three integers *type*, *l* and *r* (1 ≤ *l* ≤ *r* ≤ *n*; 1 ≤ *type* ≤ 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 test(s)**

**input**

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

**output**

24  
9  
28

**input**

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

**output**

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.