

Switches

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 256 megabytes

There are n switches in a line, ($1 \leq n \leq 50000$). The i -th switch is labeled with a_i ($1 \leq a_i \leq n$).

You are to support two types of queries:

1. $1\ l\ r$: Flip all the switches in the range $[l, r]$ have switched availabilities.
2. $2\ l\ r$: Output the minimum value of a switch that is on in the range $[l, r]$.

For every query of type 2, please output the minimum value of a switch that is currently on in the range $[l, r]$.

Input

The first line contains one integer n : the number of switches.

The second line contains n integers $a_1, a_2, a_3, \dots, a_n$.

The third line contains string of length n . If the i -th character is 1, switch i is initially on. Otherwise, it is initially off.

The third line contains one integer q : the number of queries ($1 \leq q \leq 50000$).

Each of the next q lines contains three integers describing the queries: $t\ l\ r$. t is guaranteed to be either 1 and 2, and we have $1 \leq l \leq r \leq n$.

Output

For each query of the second type, please output the minimum value of a switch that is currently on in the specified range. If there are no available switches, output 0.

Example

standard input	standard output
4	4
10 4 20 13	13
1101	0
5	13
2 1 4	
1 1 3	
2 1 4	
2 1 2	
2 4 4	