Have you heard the "segment tree"?
https://leetcode.com/problems/range-sum-query-mutable/

More hints in the next page ↓.

0							
4				0			
2		2		0		0	
1	1	1	1	1	0	1	0

Figure 1: The segment tree

The upper level is:

- Addition of the lower 2 levels if they are both non-zero.
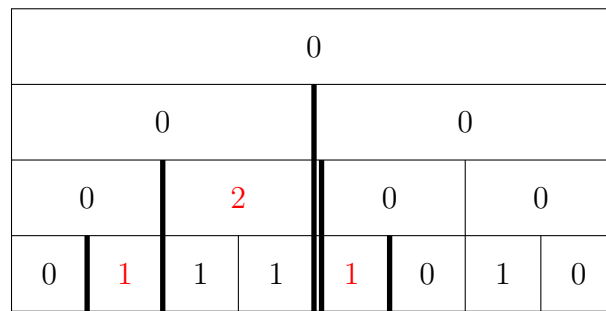
- 0, otherwise.

More hints in the next page ↓.

					0			
		0					0	
	0		2		0		0	
0	1	1	1	1	0	1	0	

Figure 2: The segment tree

Check	Result	Length	Loop invariant
Try to add 1	OK	1	Align to 2
Try to add 2	Already	1	Align to 4
Try to add 4	Fail	1	Align to 4 & Less than 4 more 1's
Try to add 2	OK	3	Less than 2 more 1's
Try to add 1	OK	4	Less than 1 more 1's (done)

Table 1: The Algorithm

Sadly I have no more hints for you.