

ARRAY : Video - 59

Medium

Leetcode
-1658

E.A.S.Y...



Minimum Operations to Reduce X to Zero.

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1658. Minimum Operations to Reduce X to Zero

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You are given an integer array `nums` and an integer `x`. In one operation, you can either remove the leftmost or the rightmost element from the array `nums` and subtract its value from `x`. Note that this **modifies** the array for future operations.

Return the minimum number of operations to reduce `x` to **exactly** 0 if it is possible, otherwise, return -1.

Example 1:

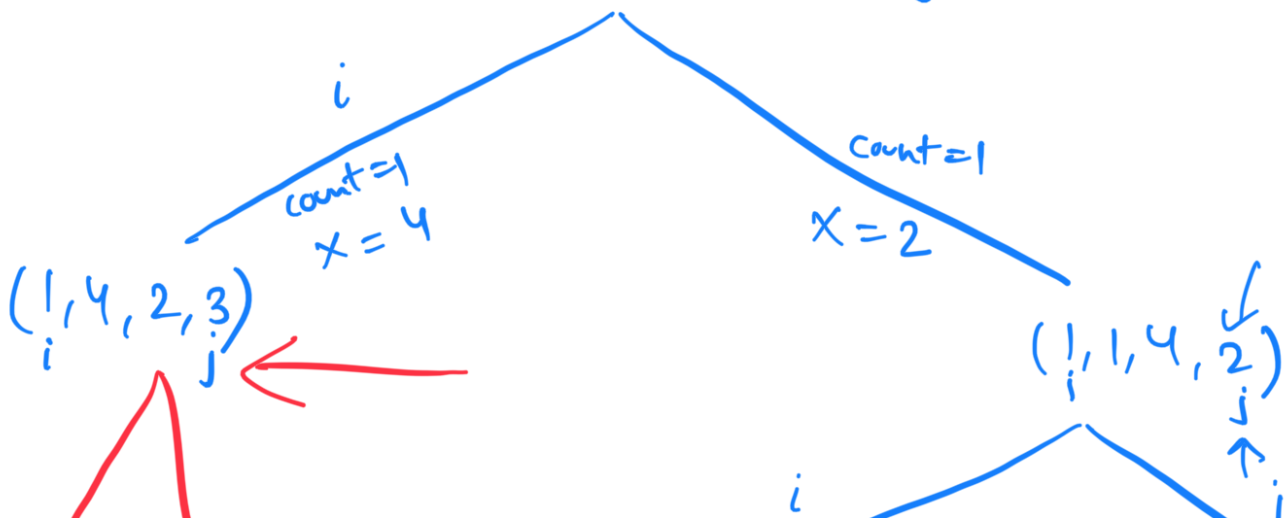
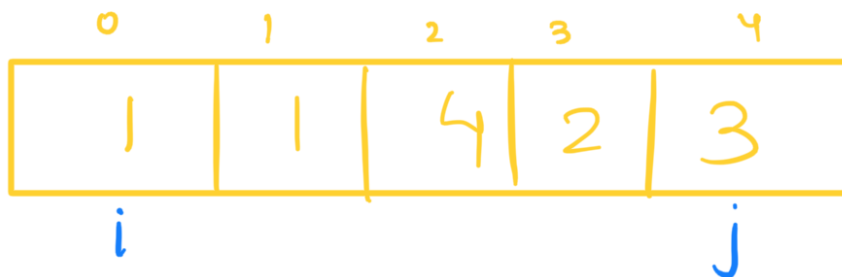
Input: `nums = [1,1,4,2,3]`, `x = 5`

Output: 2

Explanation: The optimal solution is to remove the last two elements to reduce `x` to zero.

Take
Not Take

TLE



$$\frac{\text{Count} = 2}{X = 0}$$

$$\text{minCount} = 2$$

$$\text{if } (X == 0) \{$$

$$\text{minCount} = \min(\text{min}, \text{count});$$

$$\checkmark \text{ Solve}(\text{nums}, X - \text{nums}[i], i+1, j, \text{count}+1);$$

$$\checkmark \text{ solve}(\text{nums}, X - \text{nums}[j], i, j-1, \text{count}+1);$$

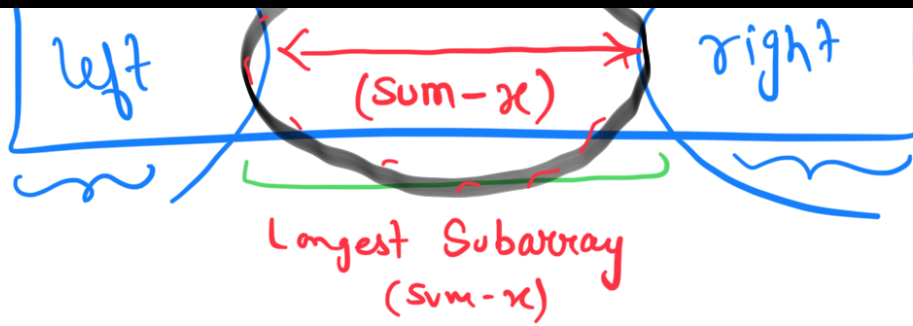
Better Approach

$$X = 7$$

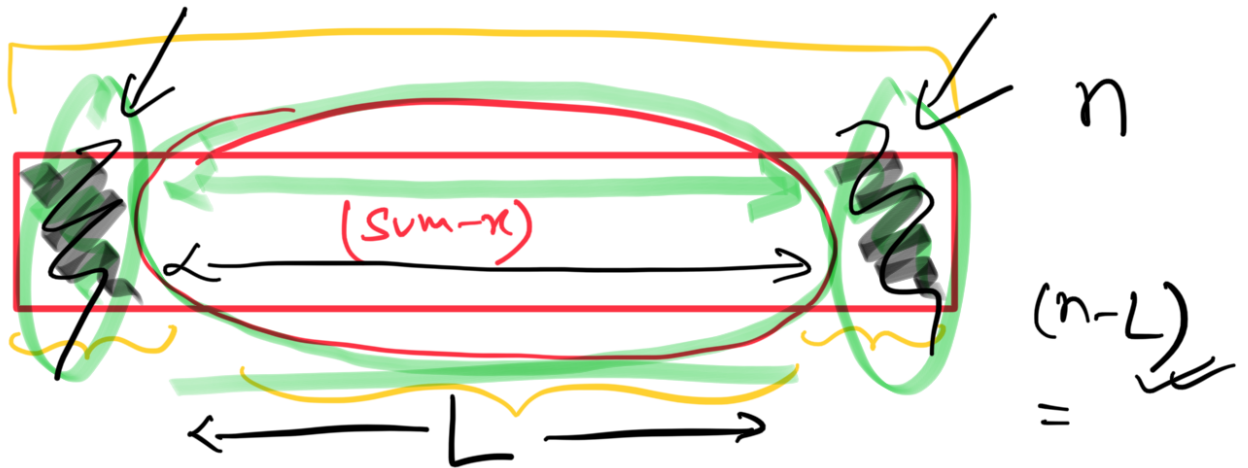
0	1	2	3	4	5	6	7	8
3	2	1	1	1	1	1	3	1

Sum

X



$$\text{left} + \text{right} = x$$



$$\text{left} + \text{right} + (\text{sum} - x) = \text{sum}$$

$$\text{left} + \text{right} = x$$

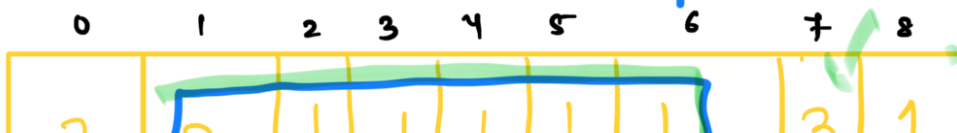
★ Find longest Subarray = $(\text{sum} - x)$

sum = Total Sum

$$\text{Sum} = 14$$

$$\text{target} = (\text{sum} - x) = 14 - 7 = 7$$

$$x = 7$$



3



$$7 = (\text{sum} - x)$$

$$7 - 2 = 5 \quad 13 - 7 = 6$$

\downarrow sum	\downarrow map	\downarrow idx
3		0
5		1
6		2
7		3
8		4
9		5
10		6
13		7
14		8

$$i = 6$$

$$j = 0$$

$$(i - j)$$

$$6 - 0$$

$$= 6$$

$$\text{length} = 6$$

$$L = 6$$

$$N = 9$$

$$\text{result} = 9 - 6 = 3$$

Small Edge Case :-

$$X = 5$$

$$\text{Sum} = 11$$

$$\boxed{\text{Sum} - X} = 11 - 5 = 6$$

-1	0	1	2	3	4
1	1	4	2	3	

0 1 2 6 8 11
6

$$6 - 6 = \underline{0}$$

Sum	idx
0	-1
1	0
2	1
6	2
8	3
11	4

$$i = 2$$

$$2 - (-1) = 3$$

OK

