Version 3 (Hard version)

Mojo has started a new business that never existed before. He designed a small shop in which he can sell products. What's really different is that some products can have a negative price!! Yes! This means that if you buy an object worth x $ (x<0), you end up gaining -x $ instead of paying. This might seem stupid, but Mojo is smarter than that.

Mojo did the following:

- He placed the products in an ordered zero-indexed list
- Each time a customer enters the shop, Mojo sets a timer for 1 minute.
- The customer has only one minute to choose 2 integers a and b such that 0<=a<b<n (n is the number of products in the shop).
- The customer can either buy all the products whose indices range from a to b inclusively or simply leave the shop.

Your friend JoJo has a very strong memory, so you decided to play a game. First, JoJo went to the shop, and instead of spending the 1 minute choosing 2 integers, he memorized the prices of products in order. He then came back and gave you a list of the prices in the same order as they were found in the shop. JoJo challenged you whether you can go to the shop and get out earning money instead of paying or not. As you laughed at this silly challenge, JoJo decided to make the challenge more "challenging". The challenge became: what is the maximum amount of money you can earn by visiting the shop exactly once?

Note that if you buy a set of products, you have to pay (or earn) the sum of their prices.

Input format and constraints:

- An integer n representing the number of products in the list (n is inclusively between 1 and 10^6).
- A list of integers that range between -100 and 100, where the ith integer represents the price of the ith product.

Output format: Print a single integer representing the maximum amount of money you can earn. Pay attention that it might not be possible to earn any amount of money. In this case, simply print 0.

Sample input:

10

4 3 4 -6 -10 10 -1 5 11 -15

Sample output:

16

Explanation: The best way in this case is to choose a=3 and b=4, thus buying the 4^{th} and 5^{th} products that cost in total -16 $. Which means that we earn in this way 16 $. No other choice of a and b can help us earn more money.