

## Problem M. Expression 3

Input file:            **standard input**  
Output file:          **standard output**  
Time limit:          5 seconds  
Memory limit:       1024 megabytes

Little Cyan Fish has  $n$  numbers  $a_1, a_2, \dots, a_n$  and  $n - 1$  operators (“+”, “-”)  $op_1, op_2, \dots, op_{n-1}$ , which are arranged in the form  $a_1 op_1 a_2 op_2 a_3 \dots a_n$ .

He wants to erase numbers one by one. In the  $i$ -th round, there are  $n + 1 - i$  numbers remaining. He can erase two adjacent numbers and the operator between them and then put a new number (derived from this operation) in this position. After  $n - 1$  rounds, only one number remains. The result of this sequence of operations is the last number remaining.

He wants to know the sum of the results of all different sequences of operations. The number can be large, output it modulo 998 244 353. Two sequences of operations are considered different if and only if he chooses different numbers in one round.

### Input

The first line of the input contains one integer  $n$  ( $2 \leq n \leq 2 \times 10^5$ ).

The second line of the input contains  $n$  integers  $a_1, a_2, \dots, a_n$  ( $0 \leq a_i \leq 10^9$ ).

The third line of the input contains a string with length  $n - 1$  consisting of “+”, “-”, which represents the operator sequence.

### Output

Output the answer modulo 998 244 353.

### Examples

| standard input         | standard output |
|------------------------|-----------------|
| 4<br>9 1 4 1<br>-+-    | 46              |
| 5<br>1 2 3 4 5<br>+-+- | 998244313       |

### Note

In the first example, there are six possible ways to erase numbers:

- $9 - 1 + 4 - 1 \Rightarrow 8 + 4 - 1 \Rightarrow 12 - 1 \Rightarrow 11$
- $9 - 1 + 4 - 1 \Rightarrow 8 + 4 - 1 \Rightarrow 8 + 3 \Rightarrow 11$
- $9 - 1 + 4 - 1 \Rightarrow 9 - 5 - 1 \Rightarrow 4 - 1 \Rightarrow 3$
- $9 - 1 + 4 - 1 \Rightarrow 9 - 5 - 1 \Rightarrow 9 - 4 \Rightarrow 5$
- $9 - 1 + 4 - 1 \Rightarrow 9 - 1 + 3 \Rightarrow 8 + 3 \Rightarrow 11$
- $9 - 1 + 4 - 1 \Rightarrow 9 - 1 + 3 \Rightarrow 9 - 4 \Rightarrow 5$

So the answer is  $11 + 11 + 3 + 5 + 11 + 5 = 46$ .