A: Splitting DNA

Time limit: 1 second

You are studying a protein that splits long chains of DNA into smaller chains. This protein works in the following way: to split a long chain of DNA, the protein first “reads” the whole chain and cuts it into two (non-necessarily equal) parts and, then, recursively splits the two smaller chains.

Splitting a chain S_1S_2 into the two parts S_1 and S_2 takes an amount of energy proportional to the length of S_1S_2 (which is the sum of the lengths of S_1 and S_2). More generally, splitting a chain $S_1 \ldots S_N$ ($N > 1$) takes an energy proportional to the length of $S_1 \ldots S_N$ to cut it into two, plus the energy required to recursively split the two smaller chains.

You know the original DNA chain $S_1 \ldots S_N$ and the N fragments $S_1, \ldots, S_N$ obtained after the split. Since nature is usually very energy-efficient, you wonder what the minimal energy required to split the DNA chain is.

You noticed that the computation of this minimal energy only depends on $L_1, \ldots, L_N$ where L_i is the length of S_i. Given these N integers $L_1, \ldots, L_N$, you want to compute the minimal energy required by the protein to split the long chain into these chunks.

Input

The input consists of two lines:

- on the first line: the number N of strings, an integer;
- on the second line: N space-separated integers representing $L_1, \ldots, L_N$.

Limits

- $1 \leqslant N \leqslant 500$;
- $0 \leqslant L_i \leqslant 10^{14}$ for all $1 \leqslant i \leqslant N$.

Output

The output should contain a single line with a single integer, the minimal total energy required to split the original chain.

Sample Input 1

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3
1 2 1
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Sample Output 1

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7
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Sample Explanation 1

We always need a first split on the original chain (of length 4) followed by a second cut on a chain of length 3. Therefore the minimal cost is $3 + 4 = 7$.

Sample Input 2

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3
2 1 1
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Sample Output 2

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6
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Sample Explanation 2

A first possibility is to split $S_1S_2S_3$ into S_1S_2 and S_3, and then split S_1S_2, for a total energy cost of 7. The only other possibility is to split $S_1S_2S_3$ into S_1 and S_2S_3, and then split S_2S_3, for a total cost of 6. Thus, the minimal energy required is 6.