

Merge Piles

time limit per test: 1 second (3 seconds for Python)
memory limit per test: 500 megabytes
input: standard input
output: standard output
points: 100 · problem code: mergepiles

You are given a sequence of N piles. The i -th pile contains a_i stones.

In one move, you may merge two adjacent groups of piles into one larger group. The cost of the move is the total number of stones in the newly merged group.

After exactly $N - 1$ moves, all piles will be merged into one group. Find the minimum possible total cost.

Input

The first line contains an integer N , the number of piles.

The second line contains N integers: $a_1, a_2, \dots, a_N$.

Output

Print one integer: the minimum possible total cost to merge all piles into one group.

Constraints

- $1 \leq N \leq 250$
- $1 \leq a_i \leq 10^6$

Example 1

Input

```
4
10 20 30 40
```

Output

```
190
```

Explanation

One optimal sequence is:

- Merge piles with 10 and 20 stones, paying 30.
- Merge the new group with the pile containing 30 stones, paying 60.
- Merge the new group with the pile containing 40 stones, paying 100.

The total cost is $30 + 60 + 100 = 190$.

Example 2

Input

```
5
1 100 1 100 1
```

Output

```
507
```