Nucleotato

Type	Input file	Output file	Time limit	Memory limit
Batch	stdin	stdout	1 second	128 MB

Statement

You are about to show to the world your newest breakthrough in genetic engineering: Nucleotatoes! Nucleotatoes are just like regular potatoes, except when you administer a nucleotato of size x with electrical energy equivalent to x gigajoules, it becomes *unstable*, allowing you to split it into two new nucleotatoes of any positive integer size, as long as the sizes add up to x.

For an upcoming science exhibition, you wish to make N nucleotatoes, the i-th nucleotato with a size of w_i. Luckily, you have a single nucleotato with a size equal to the combined size of all of the nucleotatoes you want to make. Determine the minimum and maximum amount of energy required (in gigajoules) to obtain the required nucleotatoes.

Input

The first line contains the integer N. The next line contains N space-separated integers in non-decreasing order, the i-th of which contains w_i.

Output

Output 2 space-separated intergers: the minimum and maximum energy required to obtain the required nucleotatoes from one nucleotato.

Sample Input

```
4
1 1 2 3
```

Sample Output

```
13 18
```

Explanation

To obtain the minimum, split the nucleotato of size 7 into nucleotatoes of size 3 and 4. Split the size 4 into 2 of size 2, then split one of the size 2 nucleotatoes into 2 of size 1. $7 + 4 + 2 = 13$.
To obtain the maximum, split the nucleotato of size 7 into nucleotatoes of size 1 and 6. Split the size 6 into nucleotatoes of size 1 and 5, then split the size 5 nucleotato into nucleotatoes of size 3 and 2. $7+6+5 = 18$.

Constraints

- $1 \leq N \leq 3 \times 10^5$
- $1 \leq w_i \leq 10^6$ for all i

Subtasks

Number	Points	Additional Constraints
1	13.37	$N \leq 20$
2	56.32	$N \leq 1000$ and $w_i \leq 1000$
3	30.31	No additional constraints