

## Problem G. Classification of Mushrooms

**Time limit** 1000 ms

**Mem limit** 524288 kB

Tuncay and Ismayil gathered  $n$  mushrooms together. The weights of the mushrooms are known. Now they want to divide these mushrooms into two groups so that the difference in total weight between the two groups is minimized.

### Input

The first input line contains an integer  $n$ : the number of mushrooms.

The next line contains  $n$  natural numbers  $p_1, p_2, \dots, p_n$ : the weight of each mushroom.

### Output

Print one integer: the minimum difference between the weights of the two groups.

### Constraints

- $1 \leq n \leq 20$
- $1 \leq p_i \leq 10^9$

### Example

Input	Output
5 3 2 7 4 1	1

### Explanation

The 1st group contains mushrooms weighing 2, 3, and 4 (total weight 9), and the 2nd group contains mushrooms weighing 1 and 7 (total weight 8).