

## Buy 3, Pay for 2 (3x2)

As his friends keep self inviting at his place, Luca is constantly looking for ways to save money when buying food.

Supermarkets are an excellent spot for this, with their never-ending promotional offers. In particular, “buy 3, pay for 2” is especially appealing when you need to buy a lot of things and you are certain that you will not waste a significant fraction of the goods.



Figure 1: "Buy 3, pay for 2" in an Italian fruit and vegetable shop.

The details of the promotions are rather simple: each person can use this offer only once, bringing three items to the cashier and skipping the payment of the less expensive one. If one buys less than three items, no particular discount applies.

Luca and his friends made a list of  $N$  goods they want to buy, along with their prices  $P_i$ . They are now heading towards the exit and they want to distribute the items among them so that the overall expense (that is, the sum of the amount each of them pays) is the least possible. How much will they pay?

Among the attachments of this task you may find a template file `3x2.*` with a sample incomplete implementation.

### Input

The first line contains the only integer  $N$ . The second line contains  $N$  integers  $P_i$ , the prices of the goods.

### Output






You need to write a single line with an integer: the minimum total cost for buying all items, exploiting the promotion.

## Constraints

- $1 \leq N \leq 300\,000$ .
- $1 \leq P_i \leq 1000$  for each  $i = 0 \dots N - 1$ .
- You can assume there will always be enough friends to buy the goods in groups of (up to) three items.

## Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points)      Examples.  

- **Subtask 2** (10 points)      All prices  $P_i$  are equal.  

- **Subtask 3** (30 points)       $N \leq 10$ .  

- **Subtask 4** (25 points)       $N \leq 10\,000$ .  

- **Subtask 5** (35 points)      No additional limitations.  


## Examples

input	output
3 5 34 8	42
4 5 34 8 13	52

## Explanation

In the **first sample case** there are three items: only one person is needed to buy them. The “free” one will be the first (price 5), thus the overall expense is just  $34 + 8 = 42$ .

In the **second sample case** there are four items. With two friends, the best strategy is to assign to the first one the items that cost 34, 8 and 13, making her pay  $34 + 13 = 47$ . Then, the second friend has just to buy the remaining item at cost 5 (without any discount). The overall expense of the group to buy all the items is  $47 + 5 = 52$ .