

# Problem B: Bin Packing

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A set of  $n$  1-dimensional items have to be packed in identical bins. All bins have exactly the same length  $l$  and each item  $i$  has length  $l_i \leq l$ . We look for a minimal number of bins  $q$  such that

- each bin contains at most 2 items,
- each item is packed in one of the  $q$  bins,
- the sum of the lengths of the items packed in a bin does not exceed  $l$ .

You are requested, given the integer values  $n, l, l_1, \dots, l_n$ , to compute the optimal number of bins  $q$ .

## Input specification

The first line of the input file contains the number of items  $n$  ( $1 \leq n \leq 10^5$ ). The second line contains one integer that corresponds to the bin length  $l \leq 10000$ . We then have  $n$  lines containing one integer value that represents the length of the items.

### Sample Input

```
10
80
70
15
30
35
10
80
20
35
10
30
```

### Sample Output

For each input file, your program has to write the minimal number of bins required to pack all items. A valid output corresponding to the sample input file above is:

```
6
```

The above instance and an optimal solution is shown in the figure below. Items are numbered from 1 to 10 according to the input order.

