

## Problem B. Beautiful row

Input file:            **b.in**  
Output file:           **b.out**  
Time limit:            3 seconds  
Memory limit:         256 megabytes

Ali-Amir wrote  $N$  numbers in a row. A row is called beautiful if any two of the neighbour numbers in the row have got the same amount of ones in binary or ternary notations.

Ali-Amir wants to count the number of ways the all given numbers can be written in a beautiful row.

### Input

The first line of input file contains integer  $N$  ( $2 \leq N \leq 20$ ). The next line contains  $N$  non-negative integers not exceeding  $10^9$  each.

### Output

Output the number of ways the all given numbers can be placed in a beautiful row.

### Examples

b.in	b.out
3 5 1 6	2

### Note

In the sample  $5 = 12_3$  and  $1 = 1_3$ ,  $5 = 101_2$  and  $6 = 110_2$ , thus rows 1 5 6 and 6 5 1 are beautiful.

In 25% of testcases  $N \leq 4$ .

In 50% of testcases  $N \leq 10$ .