

## Problem B. Circular Arrangement

Input file: *standard input*  
Output file: *standard output*  
Time limit: 1 second  
Memory limit: 1024 mebibytes

Arraylover Zigui has  $n$  positive integers  $c_1, c_2, \dots, c_n$ . He made every possible array that contains exactly  $c_i$  copies of integer  $i$  for each  $i$  from 1 to  $n$ . For example, when  $n = 3$ ,  $c_1 = 4$ ,  $c_2 = 3$ , and  $c_3 = 2$ , he have made many arrays, one of which is the array  $[1, 1, 3, 3, 1, 2, 2, 2, 1]$ .

Koo is a big fan of Zigui. He wants to make the same arrays as Zigui. But unlike Zigui, he loves **circular** things. Thus, he will make every array circular. In a circular array, the first element and the last element are adjacent.

Making an array has a certain cost. More specifically, the cost of making an array is the product of sizes of adjacent groups of equal values. For example, the array  $[1, 1, 3, 3, 1, 2, 2, 2, 1]$  contains five adjacent groups of equal values: two 1s, then two 3s, then one 1, then three 2s, and finally, one 1. The cost of making this array is therefore  $2 \times 2 \times 1 \times 3 \times 1 = 12$ .

In a circular array, if the values of the first element and the last element are equal, their groups are merged. Thus, the cost of making a circular array  $[1, 1, 3, 3, 1, 2, 2, 2, 1]$  is  $(2 + 1) \times 2 \times 1 \times 3 = 18$ .

Calculate the sum of the costs of all circular arrays Koo will make. Note that, in a circular array, the index of each element is still important, just like in a regular array. So, for example,  $[1, 2, 1, 2]$  and  $[2, 1, 2, 1]$  are different circular arrays. As the total cost may be very large, calculate this sum modulo  $10^9 + 7$ .

### Input

The first line contains  $n$ , the number of distinct integers to use ( $2 \leq n \leq 50$ ).

The second line contains  $n$  positive integers  $c_1, c_2, \dots, c_n$ , where  $c_i$  is the number of occurrences of integer  $i$  in each desired array ( $1 \leq c_i \leq 100$ ).

### Output

Print the sum of costs of all of all circular arrays Koo will make, modulo  $10^9 + 7$ .

### Examples

standard input	standard output
2 2 2	18
3 4 3 2	7830
4 4 4 4 4	818559048
5 1 2 3 4 5	342934740
6 7 8 9 10 11 12	609539975

### Note

For the first example, we can make six circular arrays. Here are the arrays and their costs:

$[1, 1, 2, 2]$ : 4	$[1, 2, 1, 2]$ : 1	$[1, 2, 2, 1]$ : 4
$[2, 1, 1, 2]$ : 4	$[2, 1, 2, 1]$ : 1	$[2, 2, 1, 1]$ : 4

The sum of all the costs is 18.