

**STA Online Computer Programming Contest (DWITE)
February 2003**

Problem 2

HOW MANY SUMS

Given a specified total t and a list of n integers, find the number of distinct sums, using numbers from the list of n integers, that add up to the total t . For example, if $t = 4$, $n = 6$, and the list is [4, 3, 2, 2, 1, 1], then there are four different sums that equal 4: 4, 3+1, 2+2, and 2+1+1. (A number can be used within a sum as many times as it appears in the list, and a single number counts as a sum.) Your job is to solve this problem in general.

The input file (DATA2) will contain five test cases, one per line. Each test case begins with t , the total, followed by n , the number of integers in the list, followed by n integers x_1, \dots, x_n . t will be a positive integer less than 1000, n will be an integer between 1 and 12 (inclusive), and x_1, \dots, x_n will be positive integers less than 100. All numbers will be separated by exactly one space. The numbers in each list appear in non-increasing order, and there may be repetitions.

The output file (OUT2), will contain, for each test case, the number of sums.

A number may be repeated in the sum as many times as it was repeated in the original list. Within each test case, all sums must be distinct; the same sum cannot appear twice.

Sample Input (Only three cases given)

```
4 6 4 3 2 2 1 1
6 4 2 1 1 1
300 10 50 50 50 50 25 25 25 25 25 25
```

Sample Output

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4
0
2
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