Product is Sum (Challenge Problem)

ZPRAC-16-17-LabExam-1_Session-1

[20 marks]

You are given a sequence $S = \{a_i\}$, $i = 0,1,2,\ldots,n-1$ of n elements. Given i,j such that $0 \le i < j \le n-1$, contiguous subsequence $S_{i,j}$ of S is defined as the sequence of all the elements from a_i to a_j.

Your job is to find k, which is the number of contiguous subsequences of S such that the sum of all the elements in that subsequence is equal to the product of all the elements in that subsequence.

Comment: Your solution needs to be efficient for it to pass all the test cases.

Input:
The first line contains the number n, denoting the number of elements in the sequence S
The second line contains n integers separated by spaces denoting the sequence S

Output:
A single integer equal to the number k for the sequence S

Constraints and Assumptions:
$1 \le n \le 10000$
$1 \le a_i \le 10^6$
Sum and product of any subsequence is less than 10^9

Example:
Input:
3
1 2 3

Output:

1