

Prime Segments

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 1024 megabytes

Link has a sequence of length n consisting of positive integers a .

Link wants to know how many subarrays of this sequence have a sum that is a prime number. In other words, how many pairs (l, r) ($1 \leq l \leq r \leq n$) satisfy $\sum_{i=l}^r a_i$ being a prime number.

Input

Each test file contains multiple test cases. The first line contains the number of test cases T ($1 \leq T \leq 10^4$). The description of the test cases follows.

The first line contains an integer n ($1 \leq n \leq 10^6$), the length of the sequence.

The second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^6$, $\sum a_i \leq 10^6$), representing the elements of the sequence.

It is guaranteed that the sum of all n across the test cases in a single file does not exceed 10^6 , and the sum of all $\sum a_i$ across the test cases in a single file does not exceed 10^6 .

Output

For each test case, output a single line containing one integer — the number of subarrays whose sum is a prime number.

Example

standard input	standard output
2	5
4	16
1 2 3 4	
12	
1 1 4 5 1 4 1 9 1 9 8 10	

Note

In the first sample test case, the valid (l, r) pairs are:

- $l = 1, r = 2$: the sum of this subarray is 3.
- $l = 2, r = 2$: the sum of this subarray is 2.
- $l = 2, r = 3$: the sum of this subarray is 5.
- $l = 3, r = 3$: the sum of this subarray is 3.
- $l = 3, r = 4$: the sum of this subarray is 7.