Sum is One

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You are given a sequence $A = (A_1, A_2, \ldots, A_N)$ of length N consisting of 0s and 1s. Define a simple undirected graph $G = (V, E)$ with $\frac{N(N-1)}{2}$ vertices as follows:

- For every pair of integers (i, j) satisfying $1 \leq i < j \leq N$, $(i, j) \in V$. This vertex is called vertex (i, j).
- For every triple of integers (i, j, k) satisfying $1 \leq i < j < k \leq N$ and $A_i + A_j + A_k = 1$, there is an edge connecting vertex (i, j) and vertex (j, k).
- No other pairs of vertices have edges.

Determine the number of connected components in G.

You are given T test cases. For each test case, compute the answer.

Input

The input is given in the following format:

T
case_1
case_2
$\vdots$
case_T

Here, case_i represents the i-th test case. Each test case is given in the following format:

N
$A_1\ A_2\ \cdots\ A_N$

- All input values are integers.
- $1 \leq T \leq 10^5$
- $3 \leq N \leq 10^6$
- A_i is 0 or 1 $(1 \leq i \leq N)$
- The total sum of N over all test cases in a single input is at most 10^6.

Output

For each test case, output the answer.

Example

standard input	standard output
4 5 1 0 0 1 0 5 1 1 1 1 1 12 0 0 1 1 1 0 0 0 1 0 1 0 20 0 0 1 0 0 1 1 1 0 0 1 0 0 1 1 1 1 0 1 1	4 10 13 58

Note

In the first test case, the connected components are as follows:

- $\{(1,2),(2,3),(2,4),(2,5),(3,4),(4,5)\}$
- $\{(1,3),(3,5)\}$
- $\{(1,4)\}$
- $\{(1,5)\}$

In the second test case, the graph has no edges, so the number of connected components is 10.