Week 1

Handout: 20.09.2023 18:00
Due: 04.10.2023 16:00

Autumn 2023

AlgoLab

</> **Even Pairs**

Even Pairs

You are part of a team to develop a new kind of pseudorandom number generator (PRNG). To gauge how good your algorithm is at producing random sequences of bits, you are running several different statistical tests.

For example, if was a truly random sequence of bits, then it would have the property that the sum is even for about half of the pairs (and odd for the other half).

To check whether this is the case, if are generated by your PRNG, you need to be able to count the number of pairs for which the sum is even.

Input

The first line of the input contains the number of test cases. Each of the test cases is described as follows.

- It starts with a line that contains an integer n, such that .
- The following line contains integers , separated by a space, such that , for all .

Output

For each test case output a single line containing the number of pairs such that the sum is even.

Points

There are three groups of test sets, worth points in total.

1. For the first group of test sets, worth points, you may assume that .
2. For the second group of test sets, worth points, you may assume that .
3. For the third group of test sets, worth points, there are no additional assumptions.