A. Dr. TC

time limit per test: 1 second
memory limit per test: 256 megabytes

In order to test his patients' intelligence, Dr. TC created the following test.

First, he creates a binary string* s having n characters. Then, he creates n binary strings $a_1, a_2, \ldots, a_n$. It is known that a_i is created by first copying s, then flipping the i'th character (1 becomes 0 and vice versa). After creating all n strings, he arranges them into a grid where the i'th row is a_i.

For example,

- If $s = 101$, $a = [001, 111, 100]$.
- If $s = 0000$, $a = [1000, 0100, 0010, 0001]$.

The patient needs to count the number of 1s written on the board in less than a second. Can you pass the test?

*A binary string is a string that only consists of characters 1 and 0.

Input

The first line of the input consists of a single integer t ($1 \le t \le 1000$) — the number of test cases.

The first line of each test case contains a single integer n ($1 \le n \le 10$) — the length of the binary string s.

The second line of each test case contains a single binary string s of size n.

Output

For each test case, output a single integer, the number of 1s on the board.

Example

input Copy

```
5
3
101
1
1
5
00000
2
11
3
010
```

output Copy

```
5
0
5
2
4
```

Note

The first example is explained in the statement.

For the second example, the only string written on the board will be the string 0; therefore, the answer is 0.

In the third example, the following strings will be written on the board:
[10000, 01000, 00100, 00010, 00001]; so there are five 1s written on the board.

Server time: Apr/24/2025 17:02:50^{UTC+2} (k1).
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