Good Extensions

Description

A binary string T is an *extension* of a binary string S if $|T| = 2|S| - 1$, and $T_{2i-1} = S_i, \forall\ 1 \le i \le |S_i|$, where $|T|$ denotes the length of T and the index starts from 1.

A binary string S is *good* if its length is odd and S_i is the median of $S_{1\ldots i}$ for all odd $i \in [1, |S|]$, where $S_{1\ldots i}$ denotes the first i bits of S.

Given a binary string S, you need to find the total number of good extensions of all prefixes of S, i.e., compute $\sum_{i=1}^{n} g(S_{1\ldots i})$, where $g(T)$ denotes the number of good extensions of a binary string T.

For example, given a binary string 11, the answer is 3:

1. $g(1) = 1$, the only good extension of 1 is 1.
2. $g(11) = 2$, two good extensions are 101 and 111.

You are asked to print answer modulo 998244353.

Input

Each test contains multiple test cases. The first line contains the number of test cases T. The description of the test cases follows.

The first line of each test case contains one integer n.

The second line contains a binary string of length n.

Output

For each test case, print an integer indicating the answer modulo 998244353.

Sample Input/Output

input

```
6
1
1
1
0
2
11
3
010
9
101101111
37
1011011111011010000011011111111011111
```

output

```
1
1
3
3
21
365
```

Constraints and Note

$$1 \le T \le 10^4, 1 \le n \le 2 \cdot 10^5.$$