# Problem Description

In the year 2147, quantum signal processors have revolutionized communication across the galaxy. These processors interpret cosmic background radiation as digit strings, where specific substrings called "resonant echoes" indicate stable wormhole formations. A resonant echo is defined as a substring whose numeric value is divisible by $2^L$, where $L$ is the length of the substring. Dr. Elara Vance, lead scientist at the Nebula Research Institute, needs your expertise to count these echoes in real-time to prevent catastrophic signal interference. The challenge: process signals of up to $10^5$ digits efficiently, as brute-force methods would collapse the quantum state.

Formally, given a string $S$ of $n$ digits, count the number of contiguous substrings $S[i..j]$ $(1 \leq i \leq j \leq n)$ such that the integer formed by $S[i..j]$ is divisible by $2^{j-i+1}$.

# Input

The first line contains an integer $n$ $(1 \leq n \leq 10^5)$, the length of the quantum signal string. The second line contains a string $S$ of exactly $n$ digits (each character is between '0' and '9', inclusive).

# Output

Output a single integer: the number of resonant echoes in $S$.

# Constraints

- $1 \leq n \leq 10^5$
- $S$ consists only of digits '0'–'9'

# Sample

**Input:**

```
4
1234
```

**Output:**

```
3
```