Fibonacci Words

Por ICPC 2012 World Finals ▬ Poland

Timelimit: 5

The Fibonacci word sequence of bit strings is defined as:

$$F(n) = \begin{cases} 0 & \textbf{if } n = 0 \\ 1 & \textbf{if } n = 1 \\ F(n-1) + F(n-2) & \textbf{if } n \geq 2 \end{cases}$$

Here + denotes concatenation of strings. The first few elements are:

n	$F(n)$
0	0
1	1
2	10
3	101
4	10110
5	10110101
6	1011010110110
7	101101011011010110101
8	1011010110110101101011011010110110
9	1011010110110101101011011010110101101011010110110101101101011010110101

Given a bit pattern p and a number n, how often does p occur in F(n)?

Entrada

The first line of each test case contains the integer **n** (0 ≤ **n** ≤ 100). The second line contains the bit pattern **p**. The pattern **p** is nonempty and has a length of at most 100 000 characters.

Saída

For each test case, display its case number followed by the number of occurrences of the bit pattern **p** in F(**n**). Occurrences may overlap. The number of occurrences will be less than 2^{63}.

Exemplo de Entrada	Exemplo de Saída
6 10 7 10 6 01 6 101 96 10110101101101	Case 1: 5 Case 2: 8 Case 3: 4 Case 4: 4 Case 5: 7540113804746346428