The Fibonacci word sequence of bit strings is defined as:

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

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	101101011011010110101101101011010110101101101011010110101

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

Input

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

Output

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}.

Sample Input

```
6
10
7
10
6
01
6
101
96
10110101101101
```

Sample Output

```
Case 1: 5
Case 2: 8
Case 3: 4
Case 4: 4
Case 5: 7540113804746346428
```