Problem A
Period

Input File: A.IN
Output File: standard output
Program Source File: A.PAS or A.C or A.CPP or A.JAVA

For each prefix of a given string ***S*** with ***N*** characters (each character has an ASCII code between 97 and 126, inclusive), we want to know whether the prefix is a periodic string. That is, for each ***i*** ($2 \le i \le N$) we want to know the largest ***K*** > 1 (if there is one) such that the prefix of ***S*** with length ***i*** can be written as A^K, that is ***A*** concatenated ***K*** times, for some string ***A***. Of course, we also want to know the period ***K***.

The input file consists of several test cases. Each test case consists of two lines. The first one contains ***N*** (2 <= ***N*** <= 1 000 000) – the size of the string ***S***. The second line contains the string ***S***. The input file ends with a line, having the number zero on it.

For each test case, output "Test case #" and the consecutive test case number on a single line; then, for each prefix with length ***i*** that has a period ***K*** > 1, output the prefix size ***i*** and the period ***K*** separated by a single space; the prefix sizes must be in increasing order. Print a blank line after each test case.

Example:

Input	Output
3 aaa 12 aabaabaabaab 0	Test case #1 2 2 3 3 Test case #2 2 2 6 2 9 3 12 4