



Online Judge	Problem Set	Authors	Online Contests	User
Web Board Home Page F.A.Qs Statistical Charts	Problems Submit Problem Online Status Prob.ID: <input type="text"/> <input type="button" value="Go"/>	Register Update your info Authors ranklist <input type="text"/> <input type="button" value="Search"/>	Current Contest Past Contests Scheduled Contests Award Contest	lydrainbowcat Log Out Mail:0(0) Login Log Archive

Period

Language: ▾

Time Limit: 3000MS

Memory Limit: 30000K

Total Submissions: 18674

Accepted: 9076

Description

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 ($2 \leq i \leq N$) 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 .

Input

The input consists of several test cases. Each test case consists of two lines. The first one contains N ($2 \leq N \leq 1\,000\,000$) – 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.

Output

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.

Sample Input

```
3
aaa
12
aabaabaabaab
0
```

Sample Output

```
Test case #1
2 2
3 3
```

```
Test case #2
2 2
6 2
9 3
12 4
```

Source

Southeastern Europe 2004

[\[Submit\]](#) [\[Go Back\]](#) [\[Status\]](#) [\[Discuss\]](#)



[Home Page](#)



[Go Back](#)



[To top](#)

All Rights Reserved 2003-2013 Ying Fuchen,Xu Pengcheng,Xie Di
Any problem, Please [Contact Administrator](#)