Round 1C 2009

A. All Your Base
B. Center of Mass
C. Bribe the Prisoners

Contest Analysis
Questions asked 1

Submissions

All Your Base
8pt | Not attempted 2176/2473 users correct (88%)
15pt | Not attempted 1441/2203 users correct (65%)

Center of Mass
10pt | Not attempted 823/1428 users correct (58%)
17pt | Not attempted 737/913 users correct (81%)

Bribe the Prisoners
15pt | Not attempted 1061/1579 users correct (67%)
35pt | Not attempted 302/735 users correct (41%)

Top Scores

tikitikirevenge	100
Progbeat	100
Zeroline	100
maojm	100
WSX	100
Onufry	100
Imba	100
ZhukovDmitry	100
Al.Cash	100
Ostap	100

Problem A. All Your Base

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 8 points	Solve A-small
Large input 15 points	Solve A-large

Problem

In A.D. 2100, aliens came to Earth. They wrote a message in a cryptic language, and next to it they wrote a series of symbols. We've come to the conclusion that the symbols indicate a number: the number of seconds before war begins!

Unfortunately we have no idea what each symbol means. We've decided that each symbol indicates one digit, but we aren't sure what each digit means or what base the aliens are using. For example, if they wrote "ab2ac999", they could have meant "31536000" in base 10 -- exactly one year -- or they could have meant "12314555" in base 6 -- 398951 seconds, or about four and a half days. We are sure of three things: the number is positive; like us, the aliens will never start a number with a zero; and they aren't using unary (base 1).

Your job is to determine the minimum possible number of seconds before war begins.

Input

The first line of input contains a single integer, **T**. **T** test cases follow. Each test case is a string on a line by itself. The line will contain only characters in the 'a' to 'z' and '0' to '9' ranges (with no spaces and no punctuation), representing the message the aliens left us. The test cases are independent, and can be in different bases with the symbols meaning different things.

Output

For each test case, output a line in the following format:

```
Case #X: V
```

Where **X** is the case number (starting from 1) and **V** is the minimum number of seconds before war begins.

Limits

$1 \le \mathbf{T} \le 100$
The answer will never exceed 10^{18}

Small dataset

$1 \le$ the length of each line < 10

Large dataset

$1 \le$ the length of each line < 61

Sample

Input	Output
3 11001001 cats zig	Case #1: 201 Case #2: 75 Case #3: 11


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