ACM-ICPC Indonesia National Contest 2014

Problem C

Ranting on Facebook

Time Limit: 2 seconds

Someone is ranting on his Facebook's wall (Figure 1).

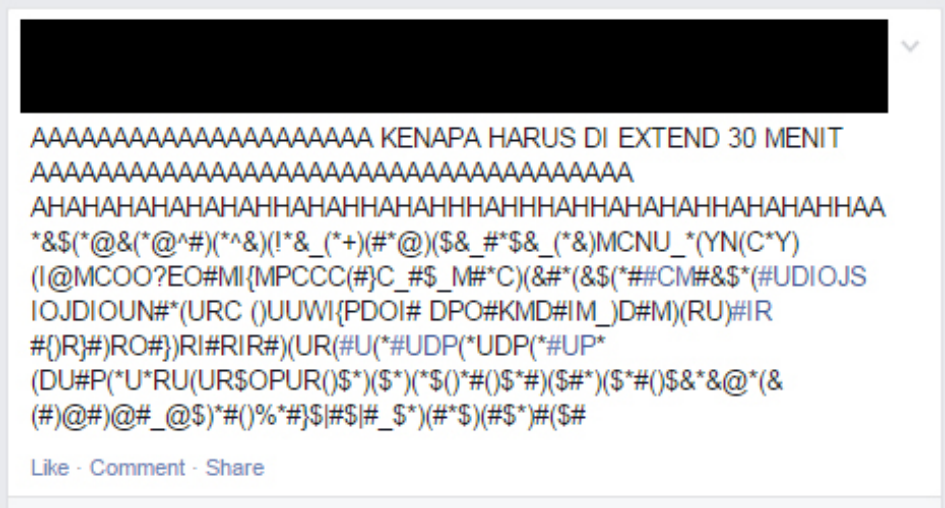

Figure 1.

Upon carefully reading the comments, apparently, this guy competed in an online programming contest which give a free t-shirt for the top 100 contestants, and he ranked 119. He argued that if the contest was not extended for 30 minutes, he would be still in the top 100, thus receiving the free t-shirt.

This problem is not related to why this guy was ranting, but on the rant itself. Notice that in Figure 1, there are several texts in the message which color are blue (actually, those are links), e.g., `#CM`, `#UDIOJS`, `#IR`, `#U`, `#UDP`, and `#UP`. Those texts are known as hashtag – a word prefixed with the hash character (`#`). However, also note that there are other texts which started by hash character but not a hastag, e.g., `#)(*,#*C)`, `##CM` (only `#CM` is the hastag, the first `#` is not part of the hashtag), etc.

Following are **simplified** hashtag rules in Facebook:

1. Hashtag begins with a hash character (`#`).
2. The word part of a hastag consists of only alphanumeric (`a-z, A-Z, 0-9`).
3. The first character of the word part of a hashtag must be an alphabets (`a-z, A-Z`).
4. Hashtag cannot immediately follow another hashtag; in other word, two different hashtags should be separated by at least one space or non-alphanumeric.

Note that those are simplified rules of Facebook's hashtag (the real rules are much more complicated). For the purpose of this problem, you should strictly follow only these simplified rules and assume nothing else.

For example,

Text	Hashtag Count	Hashtags	Note
`#ICPC`	1	`#ICPC`	--
`#ICPC#INC`	1	`#ICPC`	`#INC` is not considered as a hashtag because it violates rule (4).
`#ICPC #INC`	2	`#ICPC` `#INC`	`#ICPC` and `#INC`are separated by a space.
`#ICPC2014###INC`	2	`#ICPC2014` `#INC`	`#ICPC2014` and`#INC` are separated by ## characters.
`#ICPC2014 #2014INC`	1	`#ICPC2014`	`#2014INC` is not considered as a hashtag

because it violates rule (3).

Given a text, count the number of hashtags appeared in the given text and output them in the order of its appearance. Two hashtags starting from different indexes of the given text are considered different even though the string are the same (see sample input 3 below for clarity).

Input

The first line of input contains an integer T (1 ≤ T ≤ 100) the number of cases. Each cases contains a string S in a line. The length of S is between 1 and 1,000 inclusive and it consists of only readable ASCII characters (ASCII code 32 to 126).

Output

For each case, output in a line the "`Case #X: A`" where `X` is the case number starts from 1., and `A` denotes how many hashtag can be found in the given text. The following `A` lines each contains the hashtag in the order of its appearance in the text.

Sample Input

```
5
#ICPC2014###INC
#ICPC2014 #2014INC$#ACM-ICPC
#prestige's#coder#contest#fame#passion#coder
The quick brown fox jumps over the lazy dog
no win no t-shirt #fail
```

Output for Sample Input

```
Case #1: 2
#ICPC2014
#INC
Case #2: 2
#ICPC2014
#ACM
Case #3: 4
#prestige
#coder
#fame
#coder
Case #4: 0
Case #5: 1
#fail
```