

G: Race Track Updates

Power is out at the race track and electronic communication is impossible. But the race must go on! The operators need to get updates out to off-site betting parlors, and resort to using the pigeons that roost in the rafters. After a race begins, the operator has assistants send a very short “tweet” announcing each time one horse passes another. There are time stamps so that the receiver can reconstruct a race even if the pigeons arrive out of order. Fortunately this part is easy, and you have an assistant order the tweets.

Unfortunately, the operator misses a vital piece of data, namely, the order of the horses immediately after the race starts and before any passing takes place. Your task is to determine the winner, if it is possible to do so, or state that it is impossible.

Input

Input may consist of multiple cases. Each case is shown on a single line, beginning with the number of tweets (at most 10,000) to process. Following this are pairs of uppercase letters such as EG which would indicate that horse E just passed horse G. You may assume that a race involves only horses lettered A through the biggest letter specified in the line (no bigger than Z), and that all the pigeons arrive safely with their tweets. Some horses may never be involved in passing, so would not appear. The last case is followed by a line containing only the number 0. Arbitrary white space may be used as delimiters.

Output

For each case, display the case number followed by the letter for the winning horse, formatted as in the sample. If the race cannot be determined, indicate with a question mark. Use single spaces as delimiters.

Sample Input

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-----  
4 CA AC BD DB  
 4 CA AC AB BA  
0  
-----
```

Sample Output

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-----  
Case 1: ?  
Case 2: B  
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