In cryptography, a Caesar cipher, also known as Caesar's cipher, the shift cipher, Caesar's code or Caesar shift, is one of the simplest and most widely known encryption techniques. It is a type of substitution cipher in which each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet (wrapping around in the end). For example, given an alphabet of capital letters in usual order, with a shift of 3, `A` would be replaced by `D`, `B` would become `E`, and so on, with `Z` being replaced by `C`. The method is named after Julius C Caesar, who used it in his private correspondence.

We are given an alphabet A, a string S which is encrypted using a shift cipher and a plaintext word W.

Find the possible values of shifts (in the range $[0, |A|-1]$) used in encryption if we know that the unencrypted text contains **exactly one occurrence** of the word W.

Input

Input starts with an integer N on a line, the number of test cases. Each cases contains three strings on separate lines, alphabet A, plaintext word W and encrypted text S. Alphabet A will contain only letters and digits (['`A`'-'`Z`']['`a`'-'`z`']['`0`'-'`9`']) and its symbol order is not necessarily lexicographical (see the third sample case). A will not contain duplicate symbols. The constraints are as given: $3 \leq |A| \leq 62$, $1 \leq |W| \leq 50,000$, $3 \leq |S| \leq 500,000$.

Output

For each test case print one line of output.

If there are no shifts that would satisfy the condition of W being a part of the unencrypted S, print '`no solution`'.

If there is exactly one shift that could have been used, print '`unique:  #`' where # is the shift value.

It there are more than one possible shifts print '`ambiguous:  `' followed by the sorted list of shift values.

For clarification, see the sample output.

Sample Input

```
4
ABC
ABC
ABCBBBABC
ABC
ABC
ABCBCAABC
D7a
D7a
D7aaD77aDD7a
ABC
ABC
ABC
```

Sample Output

```
no solution
unique: 1
ambiguous: 1 2
unique: 0
```