

Moo Cipher (Hard Version)

Input file: standard input
Output file: standard output
Time limit: 10 seconds
Memory limit: 256 megabytes

Bessie the cow needs to send secret messages to Buttercup without Farmer John knowing what she's saying. To achieve this, Bessie has learned to use the Caesar Cipher to encode her messages. Farmer John, being suspicious of Bessie's activities, wants to decode her messages.

The Caesar cipher works by shifting each letter in the plaintext by a fixed number of positions down the alphabet. For example, with a shift of 1, 'a' becomes 'b', 'b' becomes 'c', and so on, with 'z' wrapping around to 'a'.

Note the following statements have been changed in the Hard Version

Bessie's messages always contain the phrase 'moo'. Given a message encoded using the Caesar cipher, print all distinct shifts that result in a valid decrypted message in increasing order.

Input

The first line contains an integer T ($1 \leq |T| \leq 10^3$), the number of test cases.

The following T lines each contain a string S ($3 \leq |S| \leq 10^5$), the encoded message. All characters are lowercase or spaces. It is guaranteed that the message contains the word 'moo'.

Output

Print T lines, one for each test case.

It is followed by a space-separated ordered list of strictly increasing integers between 0 and 25 inclusive, consisting of all distinct shifts that result in a valid solution.

Examples

standard input	standard output
1 gsaw ks qss	4
2 ksgiisawksjahjsdhcvbqss xzzixzz xzz a wwjv oprrq ikk	4 20 3 11 22