

The Wild Wizard

In the country of Thuvax lived an old wizard named Chanithpra. He practised a form of magic in which the power of spell came from the letters that were written on a piece of parchment.

When a sentence s is written, the intensity of the letters are as follows:

1. Intensity of 'a' is 1, 'b' is 2 and it continues till 'z' whose intensity is 26.
2. Intensity of 'A' is 51, 'B' is 52 and it continues till 'Z' whose intensity is 76.
3. Intensity of ' '(space) is 32.

The power of a spell written as a part of the sentence is equal to the sum of the intensities of the characters present in it modulo m .

Chanithpra finds an old parchment in Thuvax with a sentence s written on it.

Help him find the longest spell $(i, i+1, \dots, j)$ in the sentence s whose power matches with k .

$(0 \leq i \leq j < \text{length of } s)$

You need to print the starting index i ($0 \leq i \leq \text{length}-1$) of such a spell in the sentence and the length of the spell.

If there are multiple such spells, find the minimum index i and if there is no such spell print -1.

Input

The first line contains a single positive integer t ($1 \leq t \leq 100$) denoting the number of test cases.

Each test case consists of 2 lines:

The first line consists of the sentence s ($1 \leq \text{length of } s \leq 1000000$).

The second line consists of two integers m and k ($2 \leq m \leq 1000007$ and $0 \leq k < m$).

Output

For each test case, output one line containing 2 integers. The first is the minimum index i ($0 \leq i \leq s.\text{length}-1$). The second is the length of the spell.

If no such spell is present, print -1

Example

Input:

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1
Hello World
10 7
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Output:

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0 7
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