Tandem Discovery In Zebrafish. Time Limit: 1s

Probably we all know about the successful Human Genome Project (HGP) which is considered one of the greatest achievements in the history of Human civilization. But today we will talk about a different species. The sequencing of 1.7 billion bases of Zebrafish genome is another interesting and herculean task. Because after sequencing and analyzing the genome, we may reveal very important information about the species such as regulator of their diseases etc. So, to perform the task we have invited programmers around the world and you are one of them!

Before going to the main problem statement first give a sharp look at the following example.

Input String: A**CGTCGTCGTCGT**T

Special Substring: **CGTCGTCGTCGT**

Repeat Item: **CGT**

Special Substrings in Repeated form: **(CGT)4** where 4 indicates number of times it repeats.

Let's come to our main problem. You will be given a string **S** of length **N,** 0<N<1000000 which contains only the characters 'A', 'C', 'T' and 'G'. You have to find out some information about the special substrings of the given string. We call a substring special if it has tandem repeats, means the same item of length **L** repeats in consecutive manner throughout the substring from first to last **T** times such that if you concatenate the **T** repeated items you will find the original special substring. In our above example **L = 3** and **T = 4.** In this problem there can be one overlapping that you need to consider. For example, look at the string, T**ACTAACTAACTAACTA**A. You can rewrite the special substring **ACTAACTAACTAACTA** in two different forms. One is (ACTAACTA)2 and the other is (ACTA)4. In such cases you will consider the second one or (ACTA)4, means you will take only that form which has maximum repeats. Another thing is that, is this problem, there will be no partial overlapping. Means you don't need to consider cases like this, ATGA**TG**CATGCA.

Constrains: For every test case consider, 2<**L**<11 and 1<**T**<1001.

Input: You will be given a string S of length N, 0<N<1000000.

Output: In the first line of output, you will print P. P denotes the number of special substrings. Then you will print P lines and in every line you will print three information of the special substring which are separated by comma ','. First print the length **L** then the starting index (zero based) of the special substring and finally the special substring in repeated form. Follow the format of sample output for further clarification.

Sample Input 1: ACGTCGTCGTCGTT

Sample output 1:

1

3,1,(CGT)4

Sample Input 2: TACGACGTACGTACGACGTGACGTGACGTGC

Sample Output 2:

3

3,1,(ACG)2

4,7,(TACG)2

5,15,(ACGTG)3

Sample Input 3: ACTACTGTACTACT

Sample Output 3:

2

3,0,(ACT)2

3,7,(TAC)2

Sample Input 4: TACTAACTAACTAACTAA

Sample Output4:

1

4,1,(ACTA)4