

# Problem E

## Elegant Strings

Time Limit: 4 Second

A subsequence of a string  $T = t_0t_1t_2\dots t_{n-1}$  is  $T' = t_{i_0}t_{i_1}\dots t_{i_m}$  where  $i_0 < i_1 < \dots < i_m$  and  $m < n$ .

A substring of a string is a subsequence of the string where every element is consecutive.

You will be given a string  $S$ .  $P$  is the set of all the distinct **substrings** of  $S$  of length 2. Now the elegancy of each element of  $P$  is the square of the index (1-based) in  $S$  of the first letter of that substring. If a substring occurs multiple times only the first occurrence should be considered for the elegancy. Suppose,  $S = abcabd$ . This means  $P$  is consisted of the substrings  $ab$ ,  $bc$ ,  $ca$  and  $bd$ . And the elegancies of those substrings are 1, 4, 9 and 25 respectively.

Now you will be given another string  $T$ . You have to split  $T$  to minimum amount of strings such that every string is a **subsequence** of  $T$ , any of the strings should not contain any **substrings** of length 2 which don't belong to  $P$ . Every character of  $T$  should belong to **exactly** one string. If multiple ways to divide  $T$  to minimum amount of strings, you have to consider that which minimizes the total elegancy of all the strings. Elegancy of a string is the sum of elegancy of all the length 2 substrings of that string. For a one letter string the elegancy is 0. Total elegancy is the sum of elegancy of all the strings.

Let's say,  $S = abcabd$  and  $T = bcadz$ . One of the valid ways to split  $T$  is:  $\{bc, ab, d, z\}$ . Note that  $\{acb, d, z, b\}$  is not a valid way because "acb" is not a subsequence in  $T$ . Also  $\{cab, bdz\}$  is not a valid way either because the string "bdz" contains "dz" which don't belong to  $P$  although all the elements are subsequences. Now the optimal subsequences for this are  $\{bcab, z, d\}$  which has total elegancy of  $(14 + 0 + 0) = 14$ . For this case you can't split  $T$  to less than 3 subsequences and with 3 subsequences it is the minimal total elegancy.

### **Input:**

First line of the input contains a number  $X$ , the number of test cases which is at most 20. Each case starts with  $S$ . The next line contains  $T$ . Both  $S$ ,  $T$  contains only lowercase letters.  $S$  consists of at most 1000 characters and  $T$  consists of at most 100 characters. There won't be any blank lines between two lines.

## **Output:**

You have to output two numbers K and C separated by a space where K is the minimum amount of strings possible by splitting T according to the above rules and C is the minimum total elegance.

### **SAMPLE INPUT**

```
1
abcabd
bcadzb
```

### **OUTPUT FOR SAMPLE INPUT**

```
3 14
```

---

Problemsetter: Tasnim Imran Sunny

Special Thanks To: Simon Lo