W String

Problem code: WSTRING

All submissions for this problem are available.

Kira likes to play with strings very much. Moreover he likes the shape of 'W' very much. He takes a string and try to make a 'W' shape out of it such that each angular point is a '#' character and each sides has same characters. He calls them *W strings*.

For example, the *W string* can be formed from "aaaaa#bb#cc#dddd" such as:

```
a
 a              d
  a     #      d
   a    b c    d
    a b    c d
     #      #
```

He also call the strings which can generate a 'W' shape (satisfying the above conditions) *W strings*.

More formally, a string **S** is a *W string* if and only if it satisfies the following conditions (some terms and notations are explained in **Note**, please see it if you cannot understand):

- The string **S** contains **exactly 3** '#' characters. Let the indexes of all '#' be $P_1 < P_2 < P_3$ (indexes are **0**-origin).
- Each substring of $S[0, P_1-1], S[P_1+1, P_2-1], S[P_2+1, P_3-1], S[P_3+1, |S|-1]$ contains exactly one kind of characters, where **S[a, b]** denotes the non-empty substring from **a+1**th character to **b+1**th character, and **|S|** denotes the length of string **S** (See **Note** for details).

Now, his friend Ryuk gives him a string **S** and asks him to find the length of the longest *W string* which is a subsequence of **S**, with only one condition that there must not be any '#' symbols between the positions of the first and the second '#' symbol he chooses, nor between the second and the third (here the "positions" we are looking at are in **S**), i.e. suppose the index of the '#'s he chooses to make the *W string* are P_1, P_2, P_3 (in increasing order) in the original string **S**, then there must be no index **i** such that **S[i]** = '#' where $P_1 < i < P_2$ or $P_2 < i < P_3$.

Help Kira and he won't write your name in the **Death Note**.

Note:

For a given string **S**, let **S[k]** denote the **k+1**th character of string **S**, and let the index of the character **S[k]** be **k**. Let **|S|** denote the length of the string **S**. And a substring of a string **S** is a string **S[a, b] = S[a] S[a+1] ... S[b]**, where **0 ≤ a ≤ b < |S|**. And a subsequence of a string **S** is a string $S[i_0]\ S[i_1]\ ...\ S[i_{n-1}]$, where $0 \le i_0 < i_1 < ... < i_{n-1} < |S|$.

For example, let **S** be the string "kira", then **S[0]** = 'k', **S[1]** = 'i', **S[3]** = 'a', and **|S| = 4**. All of **S[0, 2]** = "kir", **S[1, 1]** = "i", and **S[0, 3]** = "kira" are substrings of **S**, but "ik", "kr", and "arik" are not. All of "k", "kr", "kira", "kia" are subsequences of **S**, but "ik", "kk" are not.

From the above definition of *W string*, for example, "a#b#c#d", "aaa#yyy#aaa#yy", and "o#oo#ooo#oooo" are *W string*, but "a#b#c#d#e", "#a#a#a", and "aa##a#a" are not.

Input

First line of input contains an integer **T**, denoting the number of test cases. Then **T** lines follow. Each line contains a string **S**.

Output

Output an integer, denoting the length of the longest *W string* as explained before. If **S** has no *W string* as its subsequence, then output **0**.

Constraints

- **1 ≤ T ≤ 100**
- **1 ≤ |S| ≤ 10000 (10^4)**
- **S** contains no characters other than lower English characters ('a' to 'z') and '#' (without quotes)

Example

Input:
3

SUCCESSFUL SUBMISSIONS

User	Time	Mem	Lang	Solution
rubicklord	0.03	3.1M	C++ 4.9.2	View
sananth12	0.04	1.7M	C	View
npsinghmrj	0.04	2.3M	C	View
bright_coder	0.04	2.3M	C	View
abaheti95	0.04	2.3M	C	View
phoenix1312	0.04	3.1M	C++ 4.9.2	View
crazykt	0.05	1.7M	C	View
siddhant77	0.05	1.8M	C	View
shalinik	0.05	2.3M	C	View
rajat1293	0.05	2.7M	C++ 4.3.2	View
nikhil30	0.05	2.8M	C++ 4.3.2	View
pramesh94	0.05	2.9M	C++ 4.3.2	View

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HELP

Program should read from **standard input** and write to **standard output**. After you submit a solution you can see your results by clicking on the **[My Submissions]** tab on the problem page. Below are the possible results:

- **Accepted** Your program ran successfully and gave a correct answer. If there is a score for the problem, this will be displayed in parenthesis next to the checkmark.
- **Time Limit Exceeded** Your program was compiled successfully, but it didn't stop before time limit. Try optimizing your approach.
- **Wrong Answer** Your program compiled and ran succesfully but the output did not match the expected output.
- **Runtime Error** Your code compiled and ran but

aaaaa#bb#cc#dddd
acb#aab#bab#accba
abc#dda#bb#bb#aca

Output:
16
10
11

Explanation

In the first case: the whole string forms a *W String*.

In the second case: acb#aab#bab#accba, the longest *W string* is ac**b#aa**b**#ba**b**#a**ccb**a**

In the third case: abc#dda#bb#bb#aca, note that even though **a**bc**#dd**a**#bb#bb#a**c**a** (boldened characters form the subsequence) is a *W string* of length **12**, it violates Ryuk's condition that there should not be any #'s inbetween the **3** chosen # positions. One correct string of length **11** is **a**bc#dd**a#bb#bb#a**c**a**

Author:	jay_adm
Tester:	tuananh93
Editorial	http://discuss.codechef.com/problems/WSTRING
Tags	dynamic-prog easy jay_adm june13
Date Added:	27-04-2013
Time Limit:	1 sec
Source Limit:	50000 Bytes
Languages:	ADA, ASM, BASH, BF, C, C99 strict, CAML, CLOJ, CLPS, CPP 4.3.2, CPP 4.9.2, CPP14, CS2, D, ERL, FORT, FS, GO, HASK, ICK, ICON, JAVA, JS, LISP clisp, LISP sbcl, LUA, NEM, NICE, NODEJS, PAS fpc, PAS gpc, PERL, PERL6, PHP, PIKE, PRLG, PYTH, PYTH 3.1.2, RUBY, SCALA, SCM guile, SCM qobi, ST, TCL, TEXT, WSPC

SUBMIT

Comments

mohity724 *@ 17 Jun 2013 10:55 PM*

Runtime Error(SIGSEGV) Admin What is meant by this??

kcahdog *@ 18 Jun 2013 12:49 AM*

@mohity724 please check FAQ http://www.codechef.com/wiki/faq

anushkagarg *@ 18 Jun 2013 09:11 PM*

This website provides nice algorithmic tutorials: www.learnalgorithms.in..

mohity724 *@ 18 Jun 2013 09:50 PM*

@kcalhdog Thanks for the reference

sanjary *@ 26 Nov 2013 04:00 PM*

WA-->WA-->WA-->WA-->AC (y) Think carefully, think out of the box....Really easy one :)

Need help? Post a comment. But before that please spare a moment to read the guidelines.
Your name:
akashiitj
Comment: *

Save

encountered an error. The most common reasons are using too much memory or dividing by zero. For the specific error codes see the help section.

- **Compilation Error** Your code was unable to compile. When you see this icon, click on it for more information.

If you are still having problems, see a sample solution here.

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