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Data Structure & Algorithms Programme (CCDSAP)

EXAM DATE **26** **AUGUST 2018**

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Faded Palindromes | Problem Code: **LEXOPAL**

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Chef likes strings a lot but he likes palindromic strings even more. Today he found an old string **s** in his garage. The string is so old that some of its characters have faded and are unidentifiable now. Faded characters in the string are represented by '.' whereas other characters are lower case Latin alphabets i.e ['a'-'z'].

Chef being the palindrome lover decided to construct the lexicographically smallest palindrome by filling each of the faded character ('.') with a lower case Latin alphabet. Can you please help him completing the task?

Input

First line of input contains a single integer **T** denoting the number of test cases. **T** test cases follow.

First and the only line of each case contains string **s** denoting the old string that chef has found in his garage.

Output

For each test case, print lexicographically smallest palindrome after filling each faded character - if it possible to construct one. Print -1 otherwise.

Constraints

- **1 ≤ T ≤ 50**
- **1 ≤ |s| ≤ 12345**
- String **s** consists of ['a'-'z'] and '.' only.

Subtasks

Subtask #1 (47 points)

Example

Input
```
3
a.ba
cb.bc
a.b
```

Output
```
abba
cbabc
-1
```

Explanation

In example 1, you can create a palindrome by filling the faded character by 'b'.

In example 2, you can replace the faded character by any character from 'a' to 'z'. We fill it by 'a', as it will generate the lexicographically smallest palindrome.

In example 3, it is not possible to make the string **s** a palindrome.

Author:	⭐ ma5termind
Tester:	⭐ dpraveen
Editorial:	http://discuss.codechef.com/problems/LEXOPAL
Tags:	ad-hoc, easy, ma5termind, sept16, string
Date Added:	4-02-2016
Time Limit:	1 secs
Source Limit:	50000 Bytes
Languages:	C, CPP14, JAVA, PYTH, PYTH 3.5, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, SCALA, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, PERL6, TEXT, SCM chicken, CLOJ, FS

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CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

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