

Problem 4:Vortex Cipher

The following secret code is based on the conversion of individual words:

Take an ordinary message, and first change all the letters to lower case letters, leaving all other characters, including spaces untouched.

Then consider each word according to the number of characters in it.

- If the word contains one single letter, replace it by the letter that comes before it in the alphabet, replacing b by a, c by b, etc, z by y. Replace a by z.
- If the word contains two letters, then switch the letters and replace each by the next letter in the alphabet: replacing the a by b, b by c, etc , y by z. replace the z by a.
- If the word contains an odd number of letters, 3 or more, then there is one single middle letter. Replace the middle letter by the first and last letter of the word and place the middle letter at the start. The words "tom" and "topples" become respectively: "otm" and "poptsl". Then replace each of the three letters involved by their predecessor in the alphabet, and so "tom" becomes "otm" first and then "nsl" and "topples" becomes "poptsl" first and then "oopsrl".
- If the word contains an even number of letters, 4 or more, then there are two middle letters. The first middle letter is switched with the first letter, and the second middle letter is switched with the last letter. All four letters involved are then replaced by their successor in the alphabet. The words "mary" and "rosemary" for example will be replaced first by "amyr" and "eosryarm" and then "bnzs" and "fosszarn".

Data41.txt (Data42.txt for the second try) contains five lines of less than 250 characters.

Each line represents one secret message that had the Vortex Cipher applied to it. You must decipher each line.

Sample Input:

```
uimflu pc fqqf zgr pmut dgq dhroe  
mzc docms's olxp dhvdr pu jgeo iunf.  
zekdv iunf nlzdn mzc iuzf'mm pdfn pifn,  
orichinh dhsqi hasrl iecenj iunf.  
uimflu pc fqqf fgmm bgut msbqef
```

Sample Output:

```
little bo peep has lost her sheep  
and doesn't know where to find them.  
leave them alone and they'll come home,  
bringing their tails behind them.  
little bo peep fell fast asleep
```