A palindrome is a string of symbols that is equal to itself when reversed. Given an input string, not necessarily a palindrome, compute the number of swaps necessary to transform the string into a palindrome. By *swap* we mean reversing the order of two adjacent symbols. For example, the string "`mamad`" may be transformed into the palindrome "`madam`" with 3 swaps:

- swap "`ad`" to yield "`mamda`"
- swap "`md`" to yield "`madma`"
- swap "`ma`" to yield "`madam`"

Input

The first line of input gives n, the number of test cases. For each test case, one line of input follows, containing a string of up to 100 lowercase letters.

Output

Output consists of one line per test case. This line will contain the number of swaps, or '`Impossible`' if it is not possible to transform the input to a palindrome.

Sample Input

```
3
mamad
asflkj
aabb
```

Sample Output

```
3
Impossible
2
```