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:

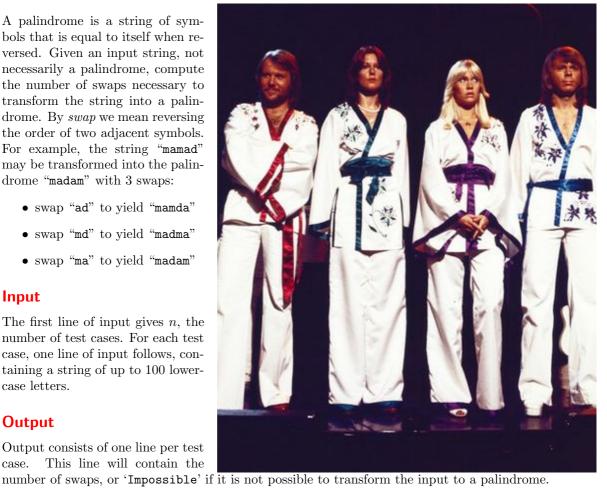
- swap "ad" to yield "mamda"
- swap "md" to yield "madma"
- swap "ma" to yield "madam"

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 This line will contain the



Sample Input

3 mamad asflkj aabb

Sample Output

Impossible