

Problem 6. Palindrome Parsing

Mark is doing research on string parsing algorithms. Currently, he is interested in palindromes. A palindrome is a string which is spelled the same forwards and back. For example, “racecar” is a palindrome. Mark wants to figure out how many palindromes a string can be broken into. For instance, the string “HELLO” can be broken into the palindromes “H”, “E”, “LL”, and “O”. Your task is to find, given a string, the smallest number of palindromes it can be broken into.

Input

The input will start with a single number, n , with $1 \leq n \leq 1000$, followed by n lines. Each line will consist of a string containing only lower and upper case letters and numbers, with no whitespace. The total length of all the strings is at most 5000.

Output

Output n lines, each containing the smallest number of substrings that the corresponding input string can be broken into such that each substring is a palindrome.

Example

standard input	standard output
3	4
HELLO	7
abcdefg	2
racecar11	