

A character string is said to have period  $k$  if it can be formed by concatenating one or more repetitions of another string of length  $k$ . For example, the string "abcabcabcabc" has period 3, since it is formed by 4 repetitions of the string "abc". It also has periods 6 (two repetitions of "abcabc") and 12 (one repetition of "abcabcabcabc").

Write a program to read a character string and determine its smallest period.

## Input

The first line of the input file will contain a single integer  $N$  indicating how many test cases that your program will test followed by a blank line. Each test case will contain a single character string of up to 80 non-blank characters. Two consecutive inputs will be separated by a blank line.

## Output

An integer denoting the smallest period of the input string for each input. Two consecutive outputs are separated by a blank line.

## Sample Input

1

HoHoHo

## Sample Output

2