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Buritomath

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Rotate String



by abhiranjan

Problem

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Editorial

Scurtle likes strings very much. He is getting bored today, because he has already completed this week's task and doesn't have anything else to do. So he starts left-rotating a string. If the length of the string is n , then he will rotate it n times and note down the result of each rotation on a paper.

For a string $S = s_1 s_2 \dots s_n$, n rotations are possible. Let's represent these rotations by $r_1, r_2 \dots r_n$. Rotating it once will result in string $r_1 = s_2 s_3 \dots s_n s_1$, rotating it again will result in string $r_2 = s_3 s_4 \dots s_n s_1 s_2$ and so on. Formally, i^{th} rotation will be equal to $r_i = s_{i+1} \dots s_{n-1} s_n s_1 \dots s_i$. Note that $r_n = S$.

Your task is to display all n rotations of string S .

For example, if $S = abc$ then it has 3 rotations. They are $r_1 = bca$, $r_2 = cab$ and $r_3 = abc$.

Input Format

The first line contains an integer, T , which represents the number of test cases to follow. Then follows T lines, which represent a test case each. Each test case contains a string, S , which consists of lower case latin characters ('a'-'z') only.

Output Format

For each test case, print all the rotations, $r_1 r_2 \dots r_n$, separated by a space.

Constraints

$$1 \leq T \leq 10$$

$$1 \leq n \leq 10^2$$

S will consist of lower case latin character, ['a'-'z'] only.

Sample Input

```
5
abc
abcde
abab
aaa
z
```

Sample Output

```
bca cab abc
bcdea cdeab deabc eabcd abcde
baba abab baba abab
aaa aaa aaa
z
```

Explanation

Test case #1: This case is mentioned in the problem statment.

Test case #2: Rotations of abcde are: bcdea -> cdeab -> deabc -> eabcd -> abcde.

Test case #3: Rotations of abab are: baba -> abab -> baba -> abab.

Test case #4: All three rotations will result into same string.

Test case #5: Only one rotation is possible, and that will result into original string.

Tested by: Lalit Kundu

f t in

Submissions: 2636

Max Score: 20



Difficulty: Easy



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☆☆☆☆

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Current Buffer (saved locally, editable)  

Racket  

```
1 #lang racket
2 ; Enter your code here. Read input from STDIN. Print output to STDOUT
3
4 (define (shift-string str)
5   (let ([str1 (- (string-length str) 1)])
6     (string-append (make-string 1 (string-ref str str1)) (substring str 0 str1))))
7
8 (define (rotations2 str start)
9   (cond [(= start (- (string-length str) 1)) ""]
10         [else (string-append (shift-string str) " " (rotations2 (shift-string str) (+ start 1)))]))
11
12 (define (rotations str) (string-trim (string-append (string-join (reverse (string-split (rotations2 str 0) " ")) " ") " str)))
13
14 (define (go n)
15   (if (= n 1) (displayln (rotations (read-line)))
16       (begin
17         (displayln (rotations (read-line)))
18         (go (- n 1)))))
19
20 (go (string->number (read-line)))
```

Line: 1 Col: 1

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