String Construction

by ma5termind

Amanda has a string, s, of m lowercase letters that she wants to copy into a new string, p. She can perform the following operations any number of times to construct string p:

- Append a character to the end of string p at a cost of 1 dollar.
- Choose any substring of p and append it to the end of p at no charge.

Given n strings (i.e., $s_0, s_1, \ldots, s_{n-1}$), find and print the *minimum* cost of copying each s_i to p_i on a new line.

Input Format

The first line contains a single integer, n, denoting the number of strings.
Each line i of the n subsequent lines contains a single string, s_i.

Constraints

- $1 \leq n \leq 5$
- $1 \leq m \leq 10^5$

Subtasks

- $1 \leq m \leq 10^3$ for 45% of the maximum score.

Output Format

For each string s_i (where $0 \leq i < n$), print the minimum cost of constructing string p_i on a new line.

Sample Input

```
2
abcd
abab
```

Sample Output

```
4
2
```

Explanation

Query 0: We start with $s = \texttt{"abcd"}$ and $p = \texttt{""}$.

1. Append character **'a'** to p at a cost of 1 dollar, $p = \texttt{"a"}$.
2. Append character **'b'** to p at a cost of 1 dollar, $p = \texttt{"ab"}$.
3. Append character **'c'** to p at a cost of 1 dollar, $p = \texttt{"abc"}$.
4. Append character **'d'** to p at a cost of 1 dollar, $p = \texttt{"abcd"}$.

Because the total cost of all operations is $1+1+1+1=4$ dollars, we print 4 on a new line.

Query 1: We start with $s =$ **"abab"** and $p =$ **""**.

1. Append character '**a**' to p at a cost of 1 dollar, $p =$ **"a"**.
2. Append character '**b**' to p at a cost of 1 dollar, $p =$ **"ab"**.
3. Append substring **"ab"** to p at no cost, $p =$ **"abab"**.

Because the total cost of all operations is $1+1=2$ dollars, we print 2 on a new line.

Note

A substring of a string S is another string S' that occurs "in" S (Wikipedia). For example, the substrings of the string "abc" are "a", "b" ,"c", "ab", "bc", and "abc".

Submissions:16324

Max Score:25

Difficulty: Easy

Rate This Challenge:

More

Current Buffer (saved locally, editable)

Java 7

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {

    static int stringConstruction(String s) {
        // Complete this function
    }

    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        int q = in.nextInt();
        for(int a0 = 0; a0 < q; a0++){
            String s = in.next();
            int result = stringConstruction(s);
            System.out.println(result);
        }
        in.close();
    }
}

```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code