String Construction

Amanda has a string of lowercase letters that she wants to copy to a new string. She can perform the following operations with the given costs. She can perform them any number of times to construct a new 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 $s[i]$, 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, the number of strings.
Each of the next n lines contains a single string, $s[i]$.

Constraints

- $1 \leq n \leq 5$
- $1 \leq |s[i]| \leq 10^5$

Subtasks

- $1 \leq |s[i]| \leq 10^3$ for 45% of the maximum score.

Output Format

For each string $s[i]$ print the minimum cost of constructing a new string $p[i]$ on a new line.

Sample Input

```
2
abcd
abab
```

Sample Output

```
4
2
```

Explanation

Query 0: We start with $s =$ **"abcd"** 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 character **'c'** to p at a cost of 1 dollar, $p =$ **"abc"**.
4. Append character **'d'** to p at a cost of 1 dollar, $p =$ **"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".