# String Construction

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 = $ **"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 "$abc$".