

# A. Encoding strings

## Description

Lanran has  $n$  strings and he wants to encode them into some binary form with only '0' and '1' which can only represent the original string and it is as short as possible (like Huffman Coding). Please tell him what is the minimal length of each string after being encoded.

## Input format

The first line contains an integer  $n$  ( $1 \leq n \leq 10$ ).

The next  $n$  lines contain one string each line. All strings consist of only lower case letters.

## Output format

Output  $n$  integers, indicating the minimal length for each string after being encoded.

## Sample input

```
3
abbbcd
lanran
glhfggwp
```

## Sample output

```
13
12
20
```

## Limitations & Hints

### Limit

1 second for each test case. The memory limit is 256MB.

For 50% of the test cases,  $n \leq 10$ ,  $1 \leq |s| \leq 100$ .

For 100% of the test cases,  $n \leq 10$ ,  $1 \leq |s| \leq 10000$ .

### Hint

For the first string, 'a' can be translated to '110', 'b' to '0', 'c' to '111', 'd' to '10'. Thus the translated string is '1100001111010', which can only represent 'abbbcd' and its length is 13.