

Repeats

A string s is called an (k,l) -repeat if s is obtained by concatenating $k \geq 1$ times some seed string t with length $l \geq 1$. For example, the string

$s = \text{abaabaabaaba}$

is a $(4,3)$ -repeat with $t = \text{aba}$ as its seed string. That is, the seed string t is 3 characters long, and the whole string s is obtained by repeating t 4 times.

Write a program for the following task: Your program is given a long string u consisting of characters 'a' and/or 'b' as input. Your program must find some (k,l) -repeat that occurs as substring within u with k as large as possible. For example, the input string

$u = \text{babbabaabaabaabab}$

contains the underlined $(4,3)$ -repeat s starting at position 5. Since u contains no other contiguous substring with more than 4 repeats, your program must output the maximum k .

Input

In the first line of the input contains H - the number of test cases ($H \leq 20$). H test cases follow. First line of each test cases is n - length of the input string ($n \leq 50000$), The next n lines contain the input string, one character (either 'a' or 'b') per line, in order.

Output

For each test cases, you should write exactly one interger k in a line - the repeat count that is maximized.

Example

Input:

```
1
17
b
a
b
b
a
b
a
a
b
a
a
b
a
a
b
a
b
```

Output:

4

since a (4, 3)-repeat is found starting at the 5th character of the input string.