Bear and Steady Gene

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Problem Submissions Leaderboard Discussions Editorial

A gene is represented as a string of length n (where n is divisible by 4), composed of the letters $\mathtt{A}$, $\mathtt{C}$, $\mathtt{T}$, and $\mathtt{G}$. It is considered to be *steady* if each of the four letters occurs exactly $\frac{n}{4}$ times. For example, $\mathtt{GACT}$ and $\mathtt{AAGTGCCT}$ are both steady genes.

Bear Limak is a famous biotechnology scientist who specializes in modifying bear DNA to make it steady. Right now, he is examining a gene represented as a string s. It is not necessarily steady. Fortunately, Limak can choose one (maybe empty) substring of s and replace it with any string of the same length.

Modifying a large substring of bear genes can be dangerous. Given a string s, can you help Limak find the length of the smallest possible substring that he can replace to make s a steady gene?

Note: A substring of a string S is a subsequence made up of zero or more *consecutive* characters of S.

Input Format

The first line contains an interger n divisible by 4, denoting the length of a string s.
The second line contains a string s of length n. Each character is one of the four: $\mathtt{A}$, $\mathtt{C}$, $\mathtt{T}$, $\mathtt{G}$.

Constraints

- $4 \leq n \leq 500\,000$
- n is divisible by 4

Subtask

- $4 \leq n \leq 2000$ in tests worth 30% points.

Output Format

On a new line, print the minimum length of the substring replaced to make s stable.

Sample Input

```
8
GAAATAAA
```

Sample Output

```
5
```

Explanation

One optimal solution is to replace a substring $\mathtt{AAATA}$ with $\mathtt{TTCCG}$, resulting in $\mathtt{GTTCCGAA}$. The replaced substring has length 5, so we print 5 on a new line.

Submissions: 6326

Max Score: 50
Difficulty: Medium

Rate This Challenge:

More

Current Buffer (saved locally, editable) C++

```cpp
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}

```

Line: 1 Col: 1

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