# Bear and Steady Gene ☆

| Problem | Submissions | Leaderboard | Editorial |
|---|---|---|---|

RATE THIS CHALLENGE

☆ ☆ ☆ ☆ ☆

A gene is represented as a string of length $n$ (where $n$ is divisible by $4$), composed of the letters $A$, $C$, $T$, and $G$. It is considered to be steady if each of the four letters occurs exactly $\frac{n}{4}$ times. For example, $GACT$ and $AAGTGCCT$ 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 *gene*. It is not necessarily steady. Fortunately, Limak can choose one (maybe empty) substring of *gene* and replace it with any string of the same length.

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

Note: A substring of a string $s$ is a subsequence made up of zero or more contiguous characters of $s$.

As an example, consider $gene = ACTGAAAG$. The substring $AA$ just before or after $G$ can be replaced with $CT$ or $TC$. One selection would create $ACTGACTG$.

**Function Description**

Complete the *steadyGene* function in the editor below. It should return an integer that represents the length of the smallest substring to replace.

steadyGene has the following parameter:

- gene: a string

**Input Format**

The first line contains an interger $n$ divisible by $4$, that denotes the length of a string *gene*.
The second line contains a string *gene* of length $n$.

**Constraints**

- $4 \leq n \leq 500\,000$
- $n$ is divisible by $4$
- $gene[i] \in [CGAT]$

**Subtask**

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

**Output Format**

## Output Format

Print the length of the minimum length substring that can be replaced to make *gene* stable.

**Sample Input**

```
8
GAAATAAA
```

**Sample Output**

```
5
```

**Explanation**

One optimal solution is to replace $\mathbf{AAATA}$ with $\mathbf{TTCCG}$ resulting in $\mathbf{GTTCCGAA}$. The replaced substring has length $\mathbf{5}$.

Java 8

1

Line: 1 Col: 1

↥ Upload Code as File ☐ Test against custom input

Run Code   Submit Code

## Congratulations

You solved this challenge. Would you like to challenge your friends?

f 🐦 in

Next Challenge