Week 4 HW: Wannabe Palindrome Problem

Substring Wannabe Palindrome Problem

Objective:

The goal of this assignment is to develop an efficient solution for finding the longest "wannabe palindromic substring" of a given string s. A wannabe palindrome is defined as a substring that allows for *one mismatch* while maintaining the general symmetric structure of a palindrome.

Problem Statement:

You are given a string consisting of only lowercase English letters. A wannabe palindromic substring is a substring where at most **one character** does not match its symmetric counterpart. The mismatch causes a gap in the palindrome and cannot be the first or last character of the wannabe palindromic string. The task is to determine the length of the longest wannabe palindromic substring in s.

A substring that contains more than **one mismatch** does *not* qualify as a wannabe palindrome.

A substring **without any mismatches** qualifies as a wannabe palindrome.

You have the option to use LLMs to help you solve this problem at your discretion. Be sure to understand your solution completely and document any resources if used.

Guidelines:

Your file name should be: **W4_wannabe_palindrome.py**

Your method name should be: **wannabe_palindrome(substring)**

Your comments should include: **your name, email, date, and description of any assistance, also see [Assignment Formatting Guidelines (https://canvas.vt.edu/courses/204793/pages/assignment-formatting-guidelines)](https://canvas.vt.edu/courses/204793/pages/assignment-formatting-guidelines) (10pts)**

Your code should: **pass the unit tests on WebCAT (90pts)**

Input:

- A single string s (1 <= length of s <= 10,000)
- The string s consists only of lowercase English letters (a-z).

Output:

- An integer representing the length of the longest wannabe palindromic substring.

Some observations:

- A palindrome is typically symmetric around its center. For example, "abcba" is a perfect palindrome.
- A **wannabe palindrome** allows for exactly **one character mismatch** while retaining the rest of the symmetry. For example, "abcbda" is considered a wannabe palindrome because the substring "abcba" is nearly symmetric with only one character differing.
- Your task is to identify the longest substring that qualifies as a wannabe palindrome.

Example Inputs and Expected Outputs:

1. **Input:**
   s = "abcba"
   Output:
   5
   Explanation: "abcba" is a perfect palindrome with no mismatches.
2. **Input:**
   s = "abcbda"
   Output:
   6
   Explanation: The subsequence "abcba" is symmetric with only one mismatch, so "abcbda" satisfies the condition of a wannabe palindrome.
3. **Input:**
   s = "abcd"
   Output:
   1
   Explanation: No wannabe palindromes exist longer than a single character.
4. **Input:**

s = "abbad"

Output:

4

Explanation: "abba" is a palindrome and therefore a wannabe palindrome, the "d" is not included.

5. **Input:**

s = "aabdcbaakkk"

Output:

8

Explanation: "aabdcbaa" is a wannabe palindrome with asymmetric center letters, the "kkk" is not included.

Submit to WebCAT:

In vscode you can rightclick on your python file and download it to your computer. Then you can submit to WebCAT and select that python file to upload. Double check that you are uploading **W4_wannabe_palindrome.py**

Result Summary

Submit Again (/Web-CAT/WebObjects/Web-CAT.woa/wo/0.0.0.0.29.1.9.0.1.2.1.1.1.0.0.1.3.3.0;jsessionid=0AD9EBE3950FAB37DDBB76E12293B5A3) Full Printable Report (/Web-CAT/WebObjects/Web-CAT.woa/wo/0.0.0.0.29.1.9.0.1.2.1.1.1.0.0.1.3.5;jsessionid=0AD9EBE3950FAB37DDBB76E12293B5A3)

Assignment	CS 2104 (13316 TR 8:00 - 9:15am (NIzamani)): HW4 Wannabe Palindrome try #3
Name	Sehrish Basir Nizamani (sehrishbasir)
Partners	Sehrish Basir Nizamani (sehrishbasir)
Submitted	09/18/25 08:33AM, 214 days, 7 hrs, 34 mins late
Total Score	**80.0**/100.0

Score Summary

Design/Readability	/10.0	‹Awaiting Staff›
Correctness/Testing:	80.0/90.0	

Final score:	**80.0/100.0**

Position in class: **❚**

View Feedback Details (/Web-CAT/WebObjects/Web-CAT.woa/wo/0.0.0.0.29.1.9.0.1.2.1.1.1.0.0.1.9.1;jsessionid=0AD9EBE3950FAB37DDBB76E12293B5A3)

+ **Rubric**