**Longest Palindromic Substring**

You are given a string s. Your task is to find and return the longest palindromic substring within the given string. A palindrome is a string that reads the same forwards and backwards.

**Input:**

A string s of length n. The length of the string satisfies 1≤n≤1000.

**Output:**

* Return the longest substring of s that is a palindrome. If there are multiple solutions, return the first one that occurs.

**Examples:**

* Example 1  
  Input: "babad"

Output: "bab"  
Explanation: Both "bab" and "aba" are palindromic substrings, but since "bab" appears first in the string, it is returned.

**Constraints:**

* 1 ≤ s.length ≤ 1000
* s consists of only lowercase English letters.

**Test Cases:**

1. Input: "babad"

Output: "bab"

1. Input: "cbbd"

Output: "bb"

1. Input: "a"

Output: "a"

1. Input: "aaaa"

Output: "aaaa"

1. Input: "abc"

Output: "a"

**Edge Cases:**

1. Single character string: The entire string is the palindrome.
2. String with all identical characters: If the string consists of repeated characters, the whole string is the longest palindrome.
3. No palindrome longer than 1: If the string does not have a palindrome longer than 1 character, return any single character.