

# Problem 214: Shortest Palindrome

## Problem Information

**Difficulty:** Hard

**Acceptance Rate:** 41.39%

**Paid Only:** No

**Tags:** String, Rolling Hash, String Matching, Hash Function

## Problem Description

You are given a string `s`. You can convert `s` to a palindrome by adding characters in front of it.

Return \_the shortest palindrome you can find by performing this transformation\_.

**Example 1:**

**Input:** s = "aacecaaa" **Output:** "aaacecaaa"

**Example 2:**

**Input:** s = "abcd" **Output:** "dcbabcd"

**Constraints:**

\* `0 <= s.length <= 5 \* 104` \* `s` consists of lowercase English letters only.

## Code Snippets

**C++:**

```
class Solution {
public:
    string shortestPalindrome(string s) {
```

```
    }  
};
```

**Java:**

```
class Solution {  
public String shortestPalindrome(String s) {  
  
}  
}
```

**Python3:**

```
class Solution:  
def shortestPalindrome(self, s: str) -> str:
```