Mastering Data Structures and Algorithms
In Class Assignment 2

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Determine if a given string is a Palindrome

Write a function to determine if a given string is a palindrome ignoring special characters and ignoring case. Your algorithm must work in place and not require any extra memory.
Examples:
Ma.....a.m!
No!....devil...,.'....lived.....on

Sol. My Python algorithm implementation is as follows.

```
class Solution:
    def isPalindrome(self, s):
        n = len(s)

        l = 0
        r = n - 1

        while l < r:
            while l < r and not (s[l].isdigit() or s[l].isalpha()):
                l += 1
            while l < r and not (s[r].isdigit() or s[r].isalpha()):
                r -= 1

            if s[l].lower() != s[r].lower():
                return False
            else:
                l += 1
                r -= 1
        return True


sol = Solution()
test_cases = ['Ma.....a.m!',"No!....devil...,.'....lived.....on"]
for test_case in test_cases:
    print(sol.isPalindrome(test_case))
```

The time complexity of this algorithm is $O(n)$.

In this case, space complexity is $O(1)$.
If the given input is in a special data structure, like deque. Then we can remove the first and last element directly, instead of creating some variables.

□