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Day 18: Queues and Stacks

by blondiebytes

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Welcome to Day 18! Today we're learning about Stacks and Queues. Check out the Tutorial tab for learning materials and an instructional video!

A *palindrome* is a word, phrase, number, or other sequence of characters which reads the same backwards and forwards. Can you determine if a given string, ***s***, is a palindrome?

To solve this challenge, we must first take each character in ***s***, *enqueue* it in a *queue*, and also *push* that same character onto a *stack*. Once that's done, we must *dequeue* the first character from the *queue* and *pop* the top character off the *stack*, then compare the two characters to see if they are the same; as long as the characters match, we continue dequeueing, popping, and comparing each character until our containers are empty (a non-match means ***s*** isn't a palindrome).

Write the following declarations and implementations:

1. Two instance variables: one for your ***stack***, and one for your ***queue***.
2. A *void pushCharacter(char ch)* method that pushes a character onto a stack.
3. A *void enqueueCharacter(char ch)* method that enqueues a character in the ***queue*** instance variable.
4. A *char popCharacter()* method that pops and returns the character at the top of the ***stack*** instance variable.
5. A *char dequeueCharacter()* method that dequeues and returns the first character in the ***queue*** instance variable.

Input Format

You *do not* need to read anything from stdin. The locked stub code in your editor reads a single line containing string ***s***. It then calls the methods specified above to pass each character to your instance variables.

Constraints

- ***s*** is composed of lowercase English letters.

Output Format

You are *not* responsible for printing any output to stdout.
If your code is correctly written and ***s*** is a palindrome, the locked stub code will print `The word, s, is a palindrome.`; otherwise, it will print `The word, s, is not a palindrome.`

Sample Input

```
racecar
```

Sample Output

```
The word, racecar, is a palindrome.
```

Submissions: 5530

Max Score: 30

Difficulty: Easy

More

Current Buffer (saved locally, editable)

Python 2

```
import sys

class Solution:
    # Write your code here
    def __init__(self):
        self.stack=[]
        self.queue=[]
    def pushCharacter(self,st):
        self.stack+=st
        #print self.stack
    def enqueueCharacter(self,st):
        self.queue.insert(0,st)
        #print self.queue
    def popCharacter(self):
        a=self.stack.pop()
        #print a
        return a
    def dequeueCharacter(self):
        b=self.queue.pop()
        #print b
        return b
# read the string s
s=raw_input()
#Create the Solution class object
obj=Solution()

l=len(s)
# push/enqueue all the characters of string s to stack
for i in range(l):
    obj.pushCharacter(s[i])
    obj.enqueueCharacter(s[i])

isPalindrome=True
'''
pop the top character from stack
dequeue the first character from queue
compare both the characters
'''
for i in range(l / 2):
    if obj.popCharacter()!=obj.dequeueCharacter():
        isPalindrome=False
        break
#finally print whether string s is palindrome or not.
if isPalindrome:
    sys.stdout.write ("The word, "+s+", is a palindrome.")
else:
    sys.stdout.write ("The word, "+s+", is not a palindrome.")


```

Line: 20 Col: 10

Upload Code as File Test against custom input Run Code Submit Code

Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3
- ✔ Test Case #4
- ✔ Test Case #5
- ✔ Test Case #6

Next Challenge