

Palindrome Function in Python

Student's Name

Department

Institutional Affiliation

Course Name and Number

Due Date

Palindrome Function in Python

Goal:

Create a python function that checks if a word or phrase is a palindrome (returns True if the word or phrase is a palindrome, otherwise, False). Moreover, make another function that will be used to test the palindrome function in several cases.

Discussion:

A word, phrase, number, or group of words that reads the same forward and backward is known as a “palindrome”. There may be punctuation and white space between words or letters (White, n.d.). These punctuations and white spaces are ignored.

There are many types of palindromes that make up the English language. What they all have in common is that they read the same, whether you are reading from right to left or left to right.

There can be a single word, multiple words, palindromic sentences, and many more (Handke, n.d.). Below you will find some great examples.

- Reviver
- Taco Cat
- Don't nod.
- Was it a cat I saw?

Solution:

Algorithm Pseudocode

Create a variable that will only store letters from the given word/phrase

Create another variable that will store the letters from the previous variable in reverse order

If the values of the variables are the same

Return True

Else (the values of the variables are different)

Return False

```

def is_palindrome(word_s):
    """This function checks if a word or phrase is a palindrome

    Args:
    word_s (str): word or phrase

    Returns:
    bool: If the word or phrase is a palindrome, return True. Else, return False.
    """
    import re

    #Store only the letters, ignore spaces and punctuations
    letters_only = re.sub(r'^A-Z', '', word_s.upper())

    #Variable that contains the characters of the previous variable in reversed order
    reversed_letters_only = letters_only[::-1]

    #If the value of the variables are the same
    if letters_only == reversed_letters_only:
        return True
    #Else (value of the variables are different)
    else:
        return False

```

Figure 1. Palindrome Function

```

def test_is_palindrome():
    """This is a test function for the is_palindrome function.
    Prints the error message if something is wrong with the is_palindrome function.
    If nothing goes wrong, nothing should be printed.
    """
    #PALINDROME check for ONE word
    if is_palindrome("Reviver") == False:
        print("The is_palindrome function is faulty. Returns False instead of True on the word: 'Reviver'")

    #PALINDROME check for two words
    if is_palindrome("Taco Cat") == False:
        print("The is_palindrome function is faulty. Returns False instead of True on the word: 'Taco Cat'")

    #PALINDROME check for sentence with punctuations
    if is_palindrome("Don't nod.") == False:
        print("The is_palindrome function is faulty. Returns False instead of True on the word: 'Don't nod.'")

#Running the test function
test_is_palindrome()

```

Figure 2. Test Function and Running the Test

```

palindrome.py > is_palindrome
1 def is_palindrome(word_s):
2     """This function checks if a word or phrase is a palindrome
3
4     Args:
5     word_s (str): word or phrase
6
7     Returns:
8     bool: If the word or phrase is a palindrome, return True. Else, return False.
9     """
10    import re
11
12    #Store only the letters, ignore spaces and punctuations
13    letters_only = re.sub(r"[^A-Z]", "", word_s.upper())
14
15    #Variable that contains the characters of the previous variable in reversed order
16    reversed_letters_only = letters_only[::-1]
17
18    #If the value of the variables are the same
19    if letters_only == reversed_letters_only:
20        return True
21    #Else (value of the variables are different)
22    else:
23        return False
24
25
26 def test_is_palindrome():
27     """This is a test function for the is_palindrome function.
28     Prints the error message if something is wrong with the is_palindrome function.
29     If nothing goes wrong, nothing should be printed.
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31     #PALINDROME check for ONE word
32     if is_palindrome("Reviver") == False:
33         print("The is_palindrome function is faulty. Returns False instead of True on the v
34
35     #PALINDROME check for two words
36     if is_palindrome("Taco Cat") == False:
37         print("The is_palindrome function is faulty. Returns False instead of True on the v
38
39     #PALINDROME check for sentence with punctuations
40     if is_palindrome("Don't nod.") == False:
41         print("The is_palindrome function is faulty. Returns False instead of True on the v
42
43
44 #Running the test function
45 test_is_palindrome()

```

```

/d/webprojects/uvocorp/Python/Zigzag,Palindrome,Anagram,Prime
$ python palindrome.py
/d/webprojects/uvocorp/Python/Zigzag,Palindrome,Anagram,Prime
$

```

Figure 3. Test Results

As shown in the figure above, our test results have not printed anything. Notice that in our `test_is_palindrome()` function, when nothing goes wrong with our `is_palindrome()` function, nothing should be printed. But when something goes wrong, an error message will be displayed. Therefore, after testing the palindrome function, the said function is already correct and is free from errors.

References

Handke, T.(n.d.). 85 Great Palindrome Examples. Next Luxury.

<https://nextluxury.com/interesting/palindrome-examples/>

White, M.(n.d.). Palindrome Examples: Fun Forward and Backward Words. Your Dictionary.

<https://examples.yourdictionary.com/palindrome-examples.html>