

day13 palindromes  
Due: Monday 9/18/23

Today's assignment is to make a program that checks for palindromes. A palindrome is a word or expression that reads the same forwards and backwards. It can be a single word:

```
kayak
```

or a sentence:

```
Oozy rat in a sanitary zoo
```

Here is a link to the Wikipedia page for palindromes: <https://en.wikipedia.org/wiki/Palindrome>

For our purposes we are ignoring spaces when checking a multiple word phrase. The basic setup of your program will be to do the following:

1. Explain what a palindrome is.
2. Ask the user to enter a phrase. If the user doesn't enter anything, tell the user to have a good day and then quit.
3. **Make a copy** of the phrase in a new variable that is lowercase and has no spaces using the `.lower()` and `.replace()` string methods.
4. Make a copy of the copy that is reversed (I tell you how to do that below.)
5. Print out the lowercase and space-free version and the reversed versions.
6. Check if the copy and the reversed copy are the same, report your results.
7. Go back to #2.

We learned about string methods last week. As a review, check out the following:

```
name = "Mr. Hays"  
newName = name.lower()           #this stores a lowercase version in newName  
newName = newName.replace(" ", "") #this changes newName so that it has no spaces  
#it tells Python to replace all spaces (" ") with nothing (empty quotes "")  
print(newName)                   #prints "mr.hays"
```

The only new thing in today's program is the need to reverse the order of a string. There isn't a simple `.reverse()` method. Instead, we do the following:

```
name = "Mr. Hays"  
reversed = name[::-1]           #this stores a reversed order copy of name in reversed  
print(reversed)                 #prints "syaH .rM"
```

Don't worry about understanding the `"[::-1]"` part. Just use it to reverse the string's order.

One other thing you'll need today is to check if what the user entered was nothing. To do that you can check if what they entered is equal to empty quotes using an if statement, for example `if phrase == ""`: That means they entered nothing and you should quit.

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Use the numbered list on the previous page as a checklist to see if you have finished the program, then test your program. It should pass these tests:

1. Prompts should be clear and neat with correct spelling and punctuation
2. Your program works with single word palindromes like "kayak"
3. Your program handles upper and lower case differences like "Madam"
4. Your program works with spaces, like "taco cat"
5. When the user enters nothing the program quits and says something nice like have a good day.
6. Your name and the date are in a comment at the top of the program.

Include output from all of your tests between sets of triple quotes after your code. This is for 3 of the 10 points for today's assignment. If you don't know how to do this, look at our quadratic formula assignment (day11) where I describe this in detail.

If you finish early, consider implementing one or more of these optional extensions:

Make a list variable and keep track of all the palindromes the user has entered, print them all out at the end of each round.

Can you make your program work even if the user adds periods and commas, question marks and exclamation points?

Find some long/cool palindromes on the Internet and add them to your introduction.

Make your own palindrome and add it to your introduction.

Sample output:

```
Welcome to the Palindrome checker. Enter text without
punctuation and I will tell you if it is a palindrome. Spaces
will be ignored and case does not matter.
```

```
Let's begin!
```

```
Please enter text to check (enter nothing to quit): rotation
rotation
noitator
'rotation' is not a palindrome
```

```
Please enter text to check (enter nothing to quit): rotator
rotator
rotator
'rotator' is a palindrome
```

```
Please enter text to check (enter nothing to quit): Oozy rat in a SANITARY zoo
oozyratinasanitaryzoo
oozyratinasanitaryzoo
'Oozy rat in a SANITARY zoo' is a palindrome
```

```
Please enter text to check (enter nothing to quit): Mr. Hays
mr.hays
syah.rm
'Mr. Hays' is not a palindrome
```

```
Please enter text to check (enter nothing to quit):
```

```
Have a nice day
```