

## LAB EXERCISE

### Palindrome

*"Madam, I'm Adam"*  
- Adam

*"Men, I'm Eminem!"*  
- M. Salveit, 2000

*"A man, a plan, a canal: Panama!"*  
- L. Mercer, 1914

*"A man, a plan, a canoe, pasta, heros, rajahs, a coloratura, maps, snipe, percale, macaroni, a gag, a banana bag, a tan, a tag, a banana bag again (or a camel), a crepe, pins, Spam, a rut, a Rolo, cash, a jar, sore hats, a peon, a canal: Panama!"*  
- G. Jacobson, 1984

#### **Background:**

1. A word is a palindrome if it reads the same forwards and backwards. For example, the word

level

is a palindrome.

2. The idea of a palindrome can be extended to phrases or sentences if we ignore details like punctuation. Here are two familiar examples:

Madam, I'm Adam  
A man, a plan, a canal: Panama

We can recognize these more elaborate examples as palindromes by considering the text that is obtained by removing all spaces and punctuation marks and converting all letters to their lower-case form.

Madam, I'm Adam ==> madamimadam  
A man, a plan, a canal: Panama ==> amanaplanacanalpanama

3. If the "word" obtained from a phrase in this manner is a palindrome, then the phrase is a palindrome.

#### **Assignment:**

1. Write a program that inputs a string from the user, and then tell the user whether or not it is a palindrome.
2. Your program should ignore the case of the letter. In other words, an "a" and an "A" should be treated the same.

3. A palindrome is determined by considering only alphabetic characters (a – z, A – Z) and numbers (0 – 9) as valid text.
4. An input string consisting of a single character is not considered to be a palindrome.
5. Your program should keep prompting the user for strings and printing whether or not the strings are palindromes until the user enters "Q" or "q" (which will signal termination of the program).

**Instructions:**

1. Use these sample phrases as inputs for your run outputs:

```
radar
J
Lewd did I live, & evil I did dwel.
I like Java
Straw? No, too stupid a fad, I put soot on warts.
```

2. Here are sample run outputs.

```
Welcome to the Palindrome Program!

Enter a string: radar
Yes, the string you entered is a palindrome.

Enter a string: J
No, the string you entered is NOT a palindrome.

Enter a string: Lewd did I live, & evil I did dwel.
Yes, the string you entered is a palindrome.

Enter a string: I like Java
No, the string you entered is NOT a palindrome.

Enter a string: Straw? No, too stupid a fad, I put soot on warts.
Yes, the string you entered is a palindrome.

Enter a string: Q
```

3. Execute the run above in 2. Call your instructor to your workstation for scoring.

Note: The World's Longest Palindrome, created at 8:02 PM on the 20th of February (a palindromic time/date - 20:02 02/20 2002) is reported at <http://www.norvig.com/palindrome.html>