

# Lab 5

## Programming to C

### CSCI 112, Fall 2020

## Objectives

- Write a recursive function
- Use typedef and enum
- Read from a file

## Description:

For this program, you are going to read in integers from a file and tell if each number is a palindrome or not. (A number is a palindrome if it is the same backward and forward – 1331 is a palindrome, 1341 is not). You will find out if a number is a palindrome using (writing) a recursive function.

## Requirements:

- Best practice: create a directory called lab5 to work in
- Read from the file /public/lab5/numbers.txt
- Write the output to the screen
- DO NOT USE GLOBALS.
- MUST COMPILE WITH -Wall
- You must submit:
  - 1) Screen shot showing your successful compile and successful run with output
  - 2) source code
- Create a Boolean type (enum). A variable of this type will be passed back from the recursive function.
- You must read each number and operate on each number as an integer (not as a character string – it's easier to do this with a character string)

## My Output

```
[k57h721@csci112 lab5]$ gcc -o lab5 -Wall -lm lab5.c
[k57h721@csci112 lab5]$ ./lab5
Is 11512 a palindrome? no
Is 12511 a palindrome? no
Is 12521 a palindrome? yes
Is 1221 a palindrome? yes
Is 123454321 a palindrome? yes
Is 12345432 a palindrome? no
Is 1551 a palindrome? yes
Is 1515 a palindrome? no
```

## Submission

- Due Date: Monday, 11/9 at 11pm

Each student will complete and submit this assignment individually. I will check for plagiarism. Labs submitted after the due date/time will not be accepted.

## Grading

Points (100 pts)

- 5 points – comments explaining what your program does
- 10 points – indent your code so it is readable
- 15 points – submitted screenshot as required above
- 15 points – compiles successfully with -Wall – no warnings
- 5 points – does not use globals
- 15 points – submitted source code
- 7 points – reads from the file in /public/lab5
- 8 points – uses a boolean data type as return from recursive function
- 10 points – creates a recursive function to determine if a number is a palindrome
- 10 points – reads in and operates on an integer (not a character string)