Lab #2
Input, Output and Files

Purpose:

The purpose of this lab is to write some code in C that uses aspects of the language that has been covered in class thus far.

Source code files for the lab are on Canvas. You will save all your source files for the lab to the GitHub account you created in Lab 0.

Preparation:

Review class presentations and chapters from the text according to the syllabus.

Procedure:

1) Start up CodeLite and open the workspace ECEGR2020 you created for Lab 0

2) In the workspace, create a new project: File -> New -> New Project. Name the project Lab_2 and make the Type a "Simple executable (gcc)"

3) For each function below, program, run and debug each. In your lab report, be sure to place the output of each function to show that your program worked.

Program the Following:

A) Create a function with the declaration long Factorial(long num);

   The function should calculate the factorial of the given value and return the value

   Print out the given number and the calculated factorial

   Test with 5 values that are entered by the user of the program

B) Create a function: int IsPalidrome(long value);

   In that function, determine if the given value's digits are a palindrome

   Examples: 1234321, 1111, 44, 5 are all palindromes

   Return 1 from the function if the value is a palindrome; 0 otherwise.

Print out the given number and if it is a palindrome or not.

Test your function with 5 different values entered by the user

C) Create a function: int HighestBitSet(int value);

In the function determine the position of the highest bit that is set (0 index)

Print out the value as a decimal value, in binary and the highest bit set

Example: Value = 9 Binary = 1001 Highest bit set = 3

Test your function with 5 different values entered by the user

D) Create a function: void ReverseIt(void)

In the function, input 5 floating point values. Print them out in reverse order to that in which they were entered

Save the values to a file first in the order they were entered and in reverse order

E) Create a function: void ReverseItAgain(void)

This function should open the file that was saved in (D), read the values and prints them all out.

F) Create a function: void Pyramid(int lines)

This function should print to the both the screen and to a file a pyramid of *

Example: lines = 5

```
    *
   ***
  *****
 *******
*********
```

Take the number of lines as input from the user.

Test with various values for lines