Lab-4

1. Objectives

A. Define a function with a formal parameter
B. Pass arguments by reference
C. Develop recursive programs for recursive mathematical functions.

2. Equipment

Any C++ compiler

3. Lab Instructions

A. Write the following function that returns a new string in which the uppercase letters are changed to lowercase and lowercase to uppercase.

string swapCase (const string& s)

Write a test program (main) that prompts the user to enter a string and invokes this function and displays the return value from this function.

Here is a sample run:

```
Enter a string: I'm here
The new string is: i'M HERE
```

B. Write a recursive function to compute the following series:

$$f(n) = 1 + \frac{1}{4} + \frac{1}{9} + \ldots + \frac{1}{n^2}$$

double series (int n);

Write a test program that displays f(n) for n = 1, 2, …, 15.

Here is a sample run:

```
n       Result
n = 1   1
n = 2   1.25
n = 3   1.36111
n = 4   1.42361
n = 5   1.46361
n = 6   1.49139
n = 7   1.5118
n = 8   1.52742
n = 9   1.53977
n = 10  1.54977
n = 11  1.55803
n = 12  1.56498
n = 13  1.57089
n = 14  1.576
n = 15  1.58044
```

4. Lab Rubric

0%	25%	50%	75%	100%
Source code files were not provided. Problem solution was not submitted.	Significant assignment requirements were ignored or violated. Program doesn't compile.	The output of the program was not shown. Lack of comments. Pour code readability (inconsistent indentation, variable naming, general organization)	Choosing a poorly approach to solve a problem, for example, solving a problem with hard coding instead of using a loop. Minor details of the program specifications were violated.	Program works correctly and meets the requirements of the assignment. Code is clean, well-organized, and well commented.

5. What to Hand In

Save your cpp files as FirstName_LastName_PartX_Lab4.cpp (for example, Carina_Winters_PartB_Lab4.cpp). Please submit (upload) your source codes (two .cpp files) and provide snapshots of all your results after running your code. Use a word or pdf file to show your results.