CSI2372 – Fall 2019
Assignment #1

Due Date: By 11:59 PM, Sunday, October 6th, 2019

Evaluation: 3% of final mark (see marking rubric at the end of handout)

Late Submission: none accepted

Purpose: The purpose of this assignment is to help you learn the C++ Basics, cout, cin / loops, function design and its call, the use of operators and primitive types.

Teams: The assignment can be done individually or in teams of 2 students maximum. Team members must be in the same lecture section. Submit one assignment per team; be sure to have both team members' name in the comments at the top of the assignment.

General Guidelines When Writing Programs:

- Include the following comments at the top of your source codes

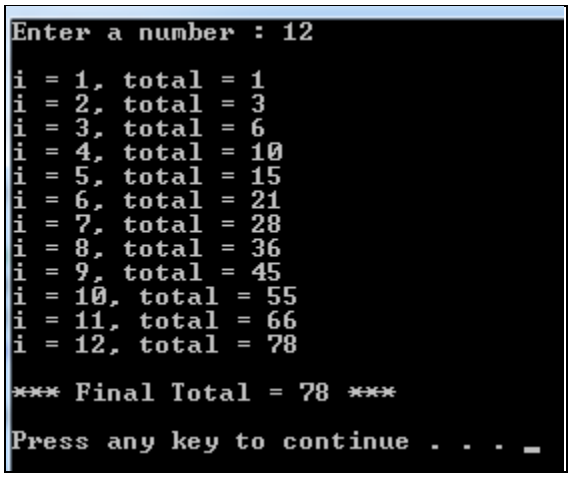
```
// -----------------------------------------------------------------------------
// Assignment (include number)
// Written by: (include your name (s) and student id(s))
// For CSI2372 Section (your section) – Fall 2019
// -----------------------------------------------------------------------------
```

Exercise #1:

Rewrite the following C program in C ++ program. C ++ program must be compiled and tested with the number entered on the screen by the user and must display the correct result:

```
#include <stdio.h>

int read_number(void)
{
        int n;
        /* Read a number */
        printf("Enter a number : ");
        scanf("%d", &n);
        return n;
}
void main()
{
        int i, n;
        long total = 0;

        n = read_number();

        for (i = 1; i <= n; i++)
        {
                total += i; /* accumulation in the variable « total » */
                printf("i = %d, total = %ld \n", i, total);
        }

        printf("\n");
        printf("*** Final Total = %ld *** \n", total);
} /* end of main() */
```

Here is an example of the output of the C program given above:



Exercise #2:

Write a program that reads two integers **a,** and, **b** on the keyboard to calculate:

$$U = (a + b)^2 \text{ and } V = (a - b)^2$$

Exercise # 3:

Write a program to read a sequence of positive integers and to display the largest integer of that sequence. Use a negative integer to indicate the end of the data entry.

Exercise # 4:

Write a program that reads a sequence of positive real numbers and calculate their average. A negative number indicates the end of the data entry.

Exercise # 5:

Write a C ++ program that converts a string into the entire number it represents. As would the ***atol()*** function declared in ***<stdlib.h>***.

Hint:

- Include the standard library **<ctype.h>** to use the function **isdigit()**
- Design the function using this signature : **long conversion(char * s)**
- Initialize your string to 80 characters in the main program, like : **char str[80];**

Evaluation Criteria or Assignment #1 (25 points)

Source code	
Question 1 (5 pts.)	
Rewriting correctly C program to C++ program	3 pts.
Displaying the correct result	2 pts.
Question 2 (5 pts.)	
Prompting user/reading data	1 pt.
Utilization of cin, cout and endl	1 pt.
Calculation of the formula	1 pt.
Displaying the result using variables values	2 pts.
Question 3 (5 pts.)	
Prompting user/reading data	1 pt.
Utilization of cin, cout and endl	1 pt.
Utilization of while loop and an array to store the numbers	1 pt.
Displaying the result using variables values	2 pts.
Question 4 (5 pts.)	
Prompting user/reading data	1 pt.
Utilization of cin, cout and endl	1 pt.
Utilization of while loop and an array to store the numbers	2 pt.
Displaying the result using variables values	1 pt.
Question 5 (5 pts.)	
Prompting user/reading data	1 pt.
Utilization of cin, cout and endl	1 pt.
Designing the conversion() function	2 pt.
Displaying the result using variables values	1 pt.