# CSCI 1470 – Fall 2015 Lab 7 In-class Assignment

**Topic:** Iteration (***while*** loops and ***for*** loops)

**Reading:** Chapter 5

Submit all source codes (\*.cpp) at the same time via email to clarenceb@uca.edu and to tvelasco1@cub.uca.edu

***\*Note: Include the following set of comments at the top of your source code for all assignments.***

***// Student Name:***

***// Assignment #: (Example: A7-1)***

***// Lab Time: Tuesday 2:40-4:30***

***/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Title of Program\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\****

***Author: Date of Work:***

***Design: Provide an general overall description of the program***

***Input:***

***Process:***

***Output:***

***\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/***

**Assignment:**

1. **(Save this file as A7-1.cpp)**Write a program that accepts real number lab results for a scientific experiment and computes the total and average of these results. Prompt and get from the user’s the name of the experiment and the number of results to be entered. Use a loop to prompt the user for all results for that experiment and accumulate the total of the results as the user enters them. Calculate the average of the results entered and display the name of the experiment, the total, and the average of the results to a thousandth of a decimal.

***Sample I/O:***

**Please enter the name of the experiment: Dry Ice****How many results would you like to enter? 4  
  
Please enter a result: 2.3  
Please enter a result: 2.1  
Please enter a result: 5.3  
Please enter a result: 6.4**

**Dry Ice Experiment Calculations:  
The total of the results is 16.100  
The average of the results is: 4.025**

**2. (Save this file as A7-2.cpp**) Write a C++ program that displays a rectangle at the given coordinate with a random color using the command “rand()%256” and the header file <cstdlib>. Your program must provide the following function:

* 1. Repeat program as many times as desired when users click ‘y’, otherwise stop the program when users click ‘n’;
  2. Ask the user to enter rectangle’s upper-left x/y coordinates, (1) check if x coordinate is valid (0~639); (2) check if y coordinate is valid (0~479). If they are not valid, prompt the error message and let the user re-enter the x or y;
  3. Ask the user to enter rectangle’s width with the prompt message “(Between 0 and 100)”, check if the length is valid, if it is not valid, prompt the error message and let the user re-enter the width;
  4. Ask the user to enter rectangle’s height with the prompt message “(Between 0 and 100)”, check if the height is valid, if it is not valid, prompt the error message and let the user re-enter the height;
  5. Draw rectangle with a random color using the command

setColor( object1, rand()%256, rand()%256, rand()%256 )

* 1. Prompt the user whether to clear the graphics display, with ‘y’ meaning “yes the clear the display” and ‘n’ meaning “do not clear the display”.

# CSCI 1470 – Fall 2015

# Lab7 Out-of-class Assignment

**Due Date: Monday Oct. 12, 11:00PM**

**Topic:** Iteration (***while*** loops and ***for*** loops)

Submit all source codes (\*.cpp) at the same time via email to clarenceb@uca.edu and to tvelasco1@cub.uca.edu

***\*Note: Include the following set of comments at the top of your source code for all assignments.***

**Assignments:**

1. ***(Save this file as* B7-1.cpp*)*** Write a program to calculate the average score for a gymnast at a gymnastic competition. The gymnast is allowed to compete in as many events as desired. Prompt and get from the user’sname of the gymnast and the number of events the gymnast competed in (between 3 and 6). Display an ***ERROR*** message if the number of events is invalid (number of events must be greater than 0). If the number of events is outside of this range, prompt the user for a new value, using a **DO-WHILE** loop. Use a **FOR** loop to prompt the user for the scores earned from all the events competed in. Accumulate the total score earned from all the events as the user enters them. (The scores range from 1 to 20.) Calculate the average of all the events competed in and display the gymnast’s ***first*** name, total and average score of the events to a tenth of a decimal.

Use a **DO-WHILE** loop to repeat this program, asking the user whether to continue (y) or to quit (n).

***Sample I/O:***

**Please enter the first name of the gymnast: ? Mary Jones  
How many events were competed in? 4**

**Enter the score from each event competed in.  
Event 1: 12.0  
Event 2: 11.5**

**Event 3: 15.0**

**Event 4: 16.0**

**Mary Jones has a total score of 54.5 with an average of 13.6**