CS2010 Lab 6

### Due: Friday, February 16, 2018

There are two parts to this lab. For each part, work with a partner to complete the following steps.

**1.** Fill in the information on the Program Development Sheet for the problem described.

**2. Type** the program on the computer – Create a new Visual C++ project folder using your last names and Lab5a (or Lab5b) for the project and .cpp file names (e.g., **Lewis\_Clark\_Lab5a** and **Lewis\_Clark \_Lab5a.cpp**). Put both of your names, class time and today's date in comments at the very beginning of the code. Add inline comments and the code in the *main* function.

**3. Debug** theprogram – Correct any errors found in your code.

**4. Test** theprogram– Try different inputs. Run your program and compare the output to your calculated results. Are they the same?

### 5. Once your programs are completely debugged and tested, turn in your .cpp files on Canvas.

### CS2010 Lab 6: Grading Rubric

**.cpp** files named correctly and turned in on Canvas.

Part A

0.5 Program uses good program style (meaningful data names, white space, indentation)

0.5 Proper while loop is used

1.5 Program runs without error and displays correct results

Part B

0.5 Program uses good program style (meaningful data names, white space, indentation)

0.5 Proper while loop is used

1.5 Program runs without error and displays correct results

**5 Total Points**

### Lab 5 - Part A: Program Development Sheet

Section: 1001 1002 1003 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class time: \_\_\_\_\_\_\_\_\_

**1. Understand the problem** – Assume that running on a treadmill burns 3.9 calories per minute. Write a program that uses a ***while*** loop to display the number of calories burned in increments of 5 minutes, starting with 5 up to the maximum minutes entered by the user. For example, if the user entered 25 as the maximum minutes, start your loop control variable at 5. The first time through the loop display the calories burned during 5 minutes of exercise and increment your loop control variable. The next time through the loop, display the calories burned for 10 minutes of exercise and so on until the calories burned for 25 minutes has been displayed.

a. Fill in the values for the last two lines.

Calories Burned on Treadmill

Minutes Calories Burned

5 19.5

10 39.0

15 58.5

20 \_\_\_\_

25 \_\_\_\_

b. What kind of ***while*** loop will you use for this program: \_\_\_ counting loop \_\_\_ sentinel-controlled loop

**2. List constants and variables (inputs, outputs).**

Constants Inputs Outputs

**3. Write the algorithm** – the list of steps needed to solve the problem. No C++ statements please! Use words like Get, Calculate, Display. What is your loop control variable? What will you initialize it to? What will you compare it to in the *while* loop condition? How will it be changed inside the loop so that your condition eventually becomes false?

### Lab 6 - Part B: Program Development Sheet

**1. Understand the problem** – Find and display the results indicated for BGSU’s basketball team for any number of game points entered by the user. For each game, prompt the user to enter the points scored, entering -1 as the score when the user is done. Display the number of games for which points were entered, the total points scored in all of these games and the average points scored per game.

a. Here is a sample of what your program should look like when it runs. Fill in any blanks.

Enter points for first game (-1 to end): 65

Enter points for next game (-1 to end): 79

Enter points for next game (-1 to end): 56

Enter points for next game (-1 to end): -1

Total points scored: \_\_\_\_\_\_\_\_

Number of games: \_\_\_\_\_\_\_\_

Average points per game: \_\_\_\_\_\_\_\_ (Total points scored divided by Number of games)

b. What kind of ***while*** loop will you use for this program: \_\_\_ counting loop \_\_\_ sentinel-controlled loop

**2. List constants and variables (inputs, outputs).**

Constants Inputs Outputs

**3. Write the algorithm** – the list of steps needed to solve the problem. No C++ statements please! What is your loop control variable? What will you initialize it to? What will you compare it to in the *while* loop condition? How will it be changed inside the loop so that your condition eventually becomes false?