**CS2010 Lab 7**

**Due: February 23, 2018**

This lab is designed to give you practice with file input and output. Work with a partner to design and code a C++ program to analyze information about Ohio colleges.

1. Create a new Visual C++ project using your last names and Lab7 for the project (**Kilby\_Noyce\_lab7**) and .cpp file name(**Kilby\_Noyce\_lab7.cpp**).

2. Copy the data file **lab7.txt** from Canvas to your project folder. Double-click on your copy of the file to view its contents. Notice that for each college there is a name, location, enrollment and tuition. Each piece of data is on a separate line. Also notice that the college names and locations have NO spaces so you don't need to use *getline* or *ignore* when reading in these values.

3. Fill out the **Program Development Sheet** for a program that will read in the data for each college from the **lab7.txt** file and display the name, location, enrollment and tuition all on one line on the screen like the sample shown below. Don't worry too much about the formatting unless you have extra time at the end of the class.

AntiochCollege YellowSprings 330 $35904

BowlingGreenStateUniv BowlingGreen 15028 $15744

. . . . . . . . . . .

4. Add steps to your algorithm to create a report file called **lab7rpt.txt** and write the college information out to this file. Add the C++ code for these steps to your .cpp file (you can leave your original code to display the data on the screen in your program). Run your program and then open the report file to make sure that the data was written correctly to this file.

5. Add steps to your algorithm (and eventually code to your program) to include a heading for your report similar to the one below. Don't worry too much about the formatting unless you have extra time at the end of the lab.

Ohio Universities Report

Your names

School name Location Enrollment Tuition

6. Add steps to your algorithm (and eventually code to your program) to find the total number of schools in the input file and display the result in the report file following the list of the schools (see sample output below).

7. Add steps to your algorithm (and eventually code to your program) to find and display the average tuition for all of the schools.

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UniversityofToledo Toledo 12958 $15821

UrbanaUniv Urbana 904 $22866

Number of Schools: xx

Average Tuition: xxxxxx

8. **Bonus (1 point)**: Find and display the highest tuition and the name of the school with the highest tuition.

9. **Turning in your lab:**

* Turn in ONLY your .cpp file on Canvas. Make sure it is named with your last names.

**Grading Rubric**

**.cpp** file turned in on Canvas, named with your last names.

\_\_\_\_\_ 2 Reads data from file and writes line for each school to report file.

\_\_\_\_\_ 1Writes report title and column headings to report file.

\_\_\_\_\_ 1Number of schools correct, written to report file.

\_\_\_\_\_ 1Average tuition correct, written to report file.

**Bonus: (1 pt)** Highest tuition and the name of the school with the highest

tuition correct, written to report file.

\_\_\_\_\_ 5  **Total Points (6** with bonus)

**Program Development Sheet**

1. **Understand the problem** – see lab assignment description.

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

Constants Inputs Outputs

None

**3. Write the algorithm** – the list of steps needed to solve the problem. Remember to include the four steps needed when your program uses files.

// Steps before *while* loop to handle file setup, variable initialization, etc.

// Steps in *while* loop (Hint: Some input, processing and output steps will go here.)

// Steps after *while* loop ends (Hint: Some processing and output steps will eventually go here.)

// Don't forget about closing the files.