**ECE 15200: Programming for Engineers**

**Purdue University Northwest, ECE Department**

Laboratory 6: Arrays

**Instructions**:

* Submit only C++ source files (\*.cpp) for all the problems through Brightspace.
* Name each file following the format ***Lastname\_*Lab*X*\_p*Y*.cpp**, replace *Lastname, X,* and *Y* with your last name, lab #, and problem #, respectively.
* Put your name, assignment number, and date on the top of each source file (\*.cpp) as multi-line comment given below:

/\*

Class: ECE15200

Author: [Your Name]

Assignment: Lab [No.]

Date: [MM]/[DD]/[YY]

\*/

Remove the brackets after updating the information in them.

* PLEASE WORK ALONE. If any plagiarism is found, you will get ZERO. Never hesitate to discuss with the instructor/TA if stuck in any assignment problem.

**Problem 1**. (Lastname\_Lab6\_p1.cpp)

1. Write a program to input the following values into an array named prices: 10.99, 4.49, 1.25, 6.75, 8.50, 16.99, 3.45, 2.05, and 17.49. After the data have been entered, have your program display the values. [**5 points**]
2. Repeat part a, but after the data have been entered, have your program display them in the following form [**10 points**]:

10.99, 4.49, 1.25

6.75, 8.50, 16.99

3.45, 2.05, 17.49

1. Repeat the part a, but after the data have been entered, have your program display them from smallest to the largest [**10 points**].

1.25, 2.05, 3.45, 4.49, 6.75, 8.50, 10.99, 16.79, 17.49

Use the follow algorithm for sorting the array from smallest to largest:

// N is the size of array and indexing starts at 0 and goes up to N-1

For i = 0 to N-2

For j = i+1 to N-1

If(arr[i] > arr[j])

Swap arr[i] and arr[j]

End If

End for

End For

**Problem 2**. (Lastname\_Lab6\_p2.cpp) Write a program that accepts the elements of an array arr1 of 10 integers from keyboard and displays them. Then, the program should reverse the array elements (i.e. swap the last element with the first one and so on) and display them. You have to reverse the elements without using any other temporary array [**15 points**].

**Problem 3.** (Lastname\_Lab6\_p3.cpp) Write a program that accepts an array of 10 integers from a keyboard, then write a function summary() to calculate the maximum number, the minimum number and the average value of the array and display them on the console [**20 points**].

**Problem 4**. (Lastname\_Lab6\_p4.cpp) Write a program that has two arrays arr1 and arr2, each contains 10 integers. The program should populate them using rand() function with values between 20 and 50, following that it should display the values in them. Write a function display\_common() that will take these two arrays as input and display the common elements in them [**20 points**].

**Problem 5**. (Lastname\_Lab6\_p5.cpp) Four students John, Julie, Kevin, and David had a final exam on Math (M), History (H) and, Science (S). Their testing scores are showing in the following table. Use a two dimensional array to save their scores.

M H S

John 96 80 89

Julie 76 93 85

Kevin 66 70 82

David 90 79 87

1. Create a function avgByStudent to calculate the average score for each student and display their average score [**10 points**].
2. Create a function avgBySubject to calculate the average score for each subject and display them [**10 points**].