ECE 152 Programming for Engineers
Laboratory 8

NOTE:
-Please submit only C++ source files (*.cpp) through the Blackboard.
-Please put your name, project description, and date on the top of your file as a comment.
-PLEASE WORK ALONE. If cheating is found, you will get **ZERO**.

1. (Lastname_Lab8_p1.cpp, 20 points)

a) Write a program has a declaration in `main()` to store the string `Vacation is near` into an array named `message`. There should be a function call to `display()` that accepts `message` in an argument named `strng` and then displays the message using the pointer notation `*(strng+i);`

b) Modify the `display()` function written above to alter the address in `message`. Always use the expression `*strng` rather than `*(strng+i)` to retrieve the correct element.

2. (Lastname_Lab8_p2.cpp, 20 points)

a) Write a program to accept five integer values from keyboard. The five values will be stored in an array using a pointer. Then display the elements of the array on the screen.

b) Modify the program of part a) in order to display the elements of the array in reverse order using a pointer.

3. (Lastname_Lab8_p3.cpp, 20 points)

Write a function void `reverse(char s[])` that reverses a character string. For example, `"Harry"` becomes `"yrraH"`, input and output from the main function (Hint: use a pointer points to the address of each element of the character. Moreover, you know that the last element of the character array is
'\0').

4. (Lastname_Lab8_p4.cpp, 20 points)

Write a program that stores the string `C plus plus is a simple programming language` into an array named `str`. Use the declaration `str[]="C plus plus is a simple programming language"`, which ensures that the end of string escape sequence '\0' is included in the array. Display the characters in the array by changing the address in a pointer called `*Pt.` Use a `for` statement in your program.

a. Modify the above program and make it to start the display from the first word which contains `a.` (Hint: display the string `a simple programming language`)

5. (Lastname_Lab8_p5.cpp, 20 points)

Write a program that declares three one dimensional arrays named `miles, gallons,` and `mpg`. Each array should be declared in main( ) and should be capable of holding ten double-

precision numbers. The numbers that should be stored in `miles` are 240.5, 300, 189.6, 310.6, 280.7, 206.9, 199.4, 160.3, 177.4, 192.3. The numbers should be stored in `gallons` are 10.3, 15.6, 8.7, 14, 16.3, 15.7, 14.9, 10.7, 8.3, 8.4. Each element of the `mpg` array should be calculated as the corresponding element of the `miles` array divided by the equivalent element of the `gallons` array. (e.g., `mpg[0] = miles[0]/gallons[0]`).
Use ***pointers*** when calculating and displaying the elements of the `mpg` array.