**ECE 1111: Engineering Computation I**

**Homework No. 6: Array and String Manipulations**

**Goal:** Demonstrate that you can manipulate data types using pointers.

**Description:** There are two tasks in this homework assignment:

1. Rewrite Lab No. 5 so that you can read a matrix from a file whose rows are different lengths (each row contains a different number of elements). Demonstrate your program works in the pdf document described below and by echoing the input data to stdout in the matrix multiplication program described below. Though you won’t turn this in as a separate program, you have to get this step working first before you proceed to step no. 2.

Hint: use a vector of float\* pointers to hold the matrix.

1. Write a program that multiplies two matrices from files using the code developed in no. 1:

**nedc\_999\_[1]: matrix\_multipy.exe m1.txt m2.txt**

Your program should work for any size matrix and should produce an error if the matrices contained in the two files are different dimensions.

Submit your code and a demonstration that it operates correctly as a pdf file following the template provided in class. Provide sufficient evidence that your code works for all reasonable test cases.

Submit your deliverables into the directory:

/**data/courses/ece\_1111/current/homework/hw\_06/lastname\_firstname**

Submit these items:

1. a Makefile named “Makefile” that builds your code by typing the command “make”, and generates matrix\_multiply.exe;
2. include a target in your Makefile that will allow you to compile debug;
3. a header file named “MyMatrix.h” that defines functions and data types used by your main program and associated functions;
4. a main program called matrix\_multiply.cc;
5. an implementation file called mm\_00.cc that contains implementations of the functions you have developed.

Demonstrate that you can compile the program debug, run it in the debugger, and step through the code using Microsoft Visual Studio Code.

A tutorial on how to install and run VSCode Studio can be found here:

https://isip.piconepress.com/courses/temple/ece\_1111/resources/tutorials/tips\_vscode/