CS 3210, Lab 2
Arrays and Matrices

1. Purpose

The purpose of this lab is to learn to manipulate 2D arrays in C++.

2. Prerequisites

An operational Linux environment either native or as a virtual machine.

3. Assignment

Write the code for the following two functions:

void printm(double ** m, int rows, int cols)

> This function takes in a 2D array (a matrix) and nicely prints it to the console. The output should be formatted as a standard printed matrix would be (rows and columns line up). Characters such as * and | can be used, but the exact formatting is up to you. Remember, the values of m are doubles, not ints. You must be able to print non-symmetric matrices.

void multiplym(double ** lhs, int rowsl, int colsl, double ** rhs, int rowsr, int colsr)

> This function takes in two 2D arrays and multiplies them (hint three for loops will probably be needed). It should then call printm to print the result. You will need to create memory on the heap to store the new matrix. Remember, the size of the new matrix is different than the originals. If lhs and rhs sizes are not compatible, an error should be thrown. All new memory created must be deleted.

These functions should be in a separate .cpp file (one file for both functions). The function declarations should be in a separate .h file (one file for both functions). Main should include an example of each function being tested. Use valgrind to test for memory leaks.

The program must be a quality, commented implementation commensurate with your programming experience.

See: https://www.mathsisfun.com/algebra/matrix-multiplying.html

Information on submitting the lab can be found in the lab submission document on Canvas

4. Due Date and Deliverable

This project is due to be submitted prior to next week's lab. You may be asked to demonstrate the program during lab in Week 3.

5. Checklist

- Print function nicely prints a matrix.
- Multiply function correctly multiplies two matrices, stores the result, prints it, then deletes the result.