**Programming Assignment 8**

In LAB 9 (10/30/20), you learned how to manipulate pointers to construct a matrix in an 1D array and run matrix multiplication over two matrices. Create a class called 'Matrix' containing constructor that initializes the number of rows and the number of columns of a new Matrix object.

The Matrix class has the following information:

1 - number of rows of matrix, represented by int type

2 - number of columns of matrix, represented by int type

3 - elements of matrix (use 1D pointer you learned from LAB9), represented by int\* type

The Matrix class has functions for each of the following:

1 - get the number of rows

2 - get the number of columns

3 - set/get the element of the matrix at a given position (i, j)

4 - adding two matrices and return the result

5 - multiplying the two matrices and return the result

Complete the Matrix class based on the following code:

Class Matrix {

private:

int \_rows, \_cols; // # rows and columns of this matrix

int\* \_matrix; // 1D pointer to the 2D matrix, row-major

public:

// TODO: constructs the matrix using std::malloc based on

the given rows and cols

Matrix(int rows, int cols) {

}

// TODO: destructs the matrix using std::free to return the

Memory you requested at constructor

~Matrix() {

}

// TODO: get the number of rows

int get\_rows() {

}

// TODO: get the number of columns

int get\_cols() {

}

// TODO: set the elements at (i, j) to a value

void set\_element(int i, int j, int v) {

}

// TODO: get the value of element at (i, j)

int get\_element(int i, int j) {

}

// TODO: add the given matrix to this matrix and return

a new matrix; DO NOT change the content of this matrix

Matrix add(const Matrix& given) {

}

// TODO: multiplies the given matrix by this matrix and return

The result to a new matrix; DO NOT change the content

of this matrix.

Matrix multiply(const Matrix& given) {

}

}