CSCI 2720: Data Structures

Fall Semester, 2016

Assignmet 1

Instructor: *Eman Saleh*

Due Date: 09/01/2016 @ 11:30 PM

Topic: Data Design and Implementation

A) Write the specification for an ADT SquareMatrix. (A square matrix can be represented by a two-dimensional array with *N* rows and *N* columns.) You may assume a maximum size of 50 rows and columns. Include the following operations:

- **`MakeEmpty(n)`**, which sets the first `n` rows and columns to zero
- **`StoreValue(i, j, value)`**, which stores a value into the [i, j] position
- **`Add`**, which adds two matrices together
- **`Subtract`**, which subtracts one matrix from another
- **`Copy`**, which copies one matrix into another

B) Convert your specification to a C++ class declaration.
C) Implement the member functions.
D) Write an Application and a test plan for your class.

Evaluation of the projects will include:

1) evaluating test cases using a pass or fail metric
2) programming style. In addition to ensuring your program compiles and runs, you are also responsible for proper documentation. Proper documentation includes proper function commenting (i.e. purpose, pre-, and post-conditions) and explicit directions on how to compile and run your programs (see next page).

Preparation:

You must include the following comment at the top of the program file. Copy and agree to the entirety of the text below, and fill in the class name of your .cpp or .h file, your name, submission date, and the program's purpose.

```
/*

 [File name here].cpp

 Author: [Your name here]

Submission Date: [Submission date here]

 Purpose: A brief paragraph description of the program. What does it do?

Statement of Academic Honesty:

The following code represents my own work. I have neither received nor given inappropriate assistance. I have not copied or modified code from any source other than the course webpage or the course textbook. I recognize that any unauthorized assistance or plagiarism will be handled in accordance with the University of Georgia's Academic Honesty Policy and the policies of this course. I recognize that my work is based on an assignment created by the Department of Computer Science at the University of Georgia. Any publishing or posting of source code for this project is strictly prohibited unless you have written consent from the Department of Computer Science at the University of Georgia.

*/
```

In the future, every file of every project you submit must have a comment such as this.

Otherwise, points will be deducted from your project.