CS 2300 Program 1
Due 21 Sep 19

Administrative:

1. Put your information (name, class, etc) in a header comment block.
2. Please comment appropriately. I'm not looking for "production quality" comments but the grader should be able to follow your code. This is particularly important if you code doesn't work properly.

Description of the Assignment:

For this assignment, download the appropriate files ("Amatrix" and "Bmatrix"). These files are text files where the first two values specify the number of rows and the number of columns in the input matrix. After this data, the remaining contents is the data in **row-major order**. For example, the if the first two integer values are "3 3" then the first 3 values are the first row in the matrix. As an example, a 3x3 matrix:

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

would have data contents "3 3 1 2 3 4 5 6 7 8 9" (without the quotation marks of course). The elements of the matrix are integers in the range [-10,10].

After you read the matrix A and matrix B data (using whatever data structure you deem appropriate), output the following data:

1. Write matrix A to a file named "CS2300P1a<your last name>.outA". This should be a plain text file. You should also write this result to stdout (the screen).
2. Write matrix B to a file named "CS2300P1a<your last name>.outB" and to stdout.
3. Calculate 5A – B using the A and B matrices above. Write this result to "CS2300P1a<your last name>.calc" and to stdout.
4. Write the transpose of the result in part 3 (just above) to a file "CS2300P1a<your last name>.trans" and to stdout. Note that the transpose is equal to the matrix itself. This is known as a symmetric matrix. This property has many beneficial properties.

Use the same format for your files as that used in the input file (ie, the first two entries should be the number of rows and columns in the resulting matrix) followed by the contents in row-major order.

Deliverables:

1. Upload your source files to Canvas. Everything needed to reproduce your results should be included.

2. Provide a PDF version of your source file(s).
3. Create a video of your program running correctly. You can use a screen capture program or just record with (for example) a smart phone. This video should be uploaded to Canvas.
4. On the Canvas submission, note anything that didn't work properly.

Rubric

1. Correct output of the A matrix: 20 pts
2. Correct output of the B matrix: 20 pts
3. Correctly calculating and outputting 5A – B to a file: 30 points
4. Correctly calculating the transpose: 30 points
5. No video: -30 points
6. No PDF of source files: -25 points