Lab Objectives:
To input a matrix, perform elementary operations on that matrix (or matrices) and output the results.

Description of Lab:
Your program will ask the user to enter two matrices of any size, A and B and a scalar c. It will then perform the following operations (without prompting): addition \((A + B)\), multiplication by a scalar \((cA)\), transpose \((A^T)\), and matrix multiplication \((AB)\).

Requirements: The program should…
1. Ask for scalar \(c\).
2. Prompt the user to enter two different matrices.
3. Perform addition of matrices \((A + B)\), or output an error message if dimensions do not match.
4. Multiply matrix \(A\) by the inputted scalar value (i.e. \(cA\)).
5. Find the transpose of the matrix \(A\) (i.e. \(A^T\)).
6. Perform multiplication of two matrices \((AB)\), or output an error message.
7. Output the results in a readable format.

What to Turn In:
1. A printout of your original code
2. A printout of the results for the following sample data inputs:
   a. \[A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 1 & 7 \\ 4 & 3 & 6 \end{bmatrix} \quad B = \begin{bmatrix} -1 & 7 & 2 \\ 1 & 2 & 8 \\ 5 & 1 & 3 \end{bmatrix} \quad c = 2\]
   b. \[A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \quad B = \begin{bmatrix} -1 & 7 & 2 \\ 1 & 2 & 8 \\ 5 & 1 & 3 \end{bmatrix} \quad c = 2\]
3. Please be sure to label your pages at the top
   (i.e. “Original Code page 1 of 2” and “Run ‘a’ page 1 of 1”, etc).
4. Include a cover sheet, with “Programming Assignment 3”, your name, and date.