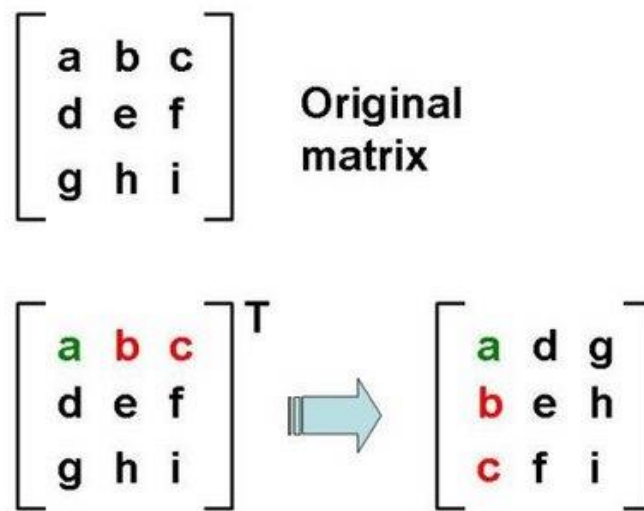CS 211

Lab: I/O

Part A:

1. Populate a 2-Dimensional array of size 20 x 10 with random integers in the range of 1 – 9999.
2. Write the integers to a text file delimited by a pipe character, |.

Part B:
1. Read the integers from text file you just created into an array. The new matrix must be the transpose of the original.

Ex.

$$\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$ Original matrix

$$\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}^T \implies \begin{bmatrix} a & d & g \\ b & e & h \\ c & f & i \end{bmatrix}$$

For example:

$$A = \begin{bmatrix} 1 & 2 & -1 & 4 & 0 \\ 5 & 12 & 1 & -1 & -3 \\ 7 & 5 & 3 & 2 & 0 \end{bmatrix}$$

Then A transpose, A^T, equals the following 5×3 matrix:

$$A^T = \begin{bmatrix} 1 & 5 & 7 \\ 2 & 12 & 5 \\ -1 & 1 & 3 \\ 4 & -1 & 2 \\ 0 & -3 & 0 \end{bmatrix}$$