Business and Computer University College

CSI 211 Programming 1
Tutorial Sheet: 9

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1. write a program that finds the transpose of a square matrix, the user should enter the elements of the matrix and the program should print them in the transpose form. For example:

$$M = \begin{matrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{matrix} \quad \text{then} \quad M^T = \begin{matrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{matrix}$$

2. Use the program of problem 1 to determine the inverse of a square matrix.
   Hint:

$$\text{If } M = \begin{matrix} A & B & C \\ D & E & F \\ G & H & I \end{matrix}$$

   Then: $M^{-1} = (1/delta)*M^T$
   Where: Delta = A*(E*I-F*H)-B*(D*I-F*G)+C*(D*H-E*G)

3. Write a program that initialize a 2-dimentional array with the following data, and finds the average of each of the students:

	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Student# 1	77	25	91	71	68
Student# 2	90	60	28	82	89
Student# 3	50	70	38	98	85

   Write function that determines the average of the class in each of the grades.
   Write two functions to return the maximum and the minimum grades of the above table.