

An-Najah National University
College of Engineering & Information Technology
Department of Computer Science
Principles of Programming II
Homework - Matrices

Write a C++ program that defines a 4x5 matrix and then performs the following:

1. Asks the user to input the elements of the matrix.
2. Finds and print the transpose of the matrix. The transpose of a matrix is obtained by exchanging the rows and the columns of the matrix. For example:

$$M = \begin{bmatrix} 2 & -9 & 3 \\ 13 & 11 & -17 \\ 3 & 6 & 15 \\ 4 & 13 & 1 \end{bmatrix} \Rightarrow M^T = \begin{bmatrix} 2 & 13 & 3 & 4 \\ -9 & 11 & 6 & 13 \\ 3 & -17 & 15 & 1 \end{bmatrix}$$

3. Find the summation of a certain row in the original matrix.

Your program must keep on displaying the following list of tasks to the user and performing the chosen task until the user inputs 5 (Exit).

Please choose a task by entering the task number:

1. Input a new matrix
2. Find and display the transpose of the current matrix
3. Output the current (original) matrix
4. Find the sum of a certain row in the current (original) matrix.
5. Exit.

Your code MUST use the following functions to perform the chosen tasks:

ReadMatrix(.....): To read a new matrix.

FindTranspose(.....): Finds and stores the transpose of the matrix.

PrintTranspose(.....): Displays the transpose matrix.

PrintMatrix(.....): Displays the original matrix.

FindSum(.....): Computes the sum of a certain row in the matrix.

Make sure to properly implement and call the above functions in your program.

Submission:

1. Submit your C++ source code via Moodle.
2. Submit your work within the deadline stated on Moodle.
3. Your code should be well-written and documented.
4. You should work individually on this assignment.

Good luck