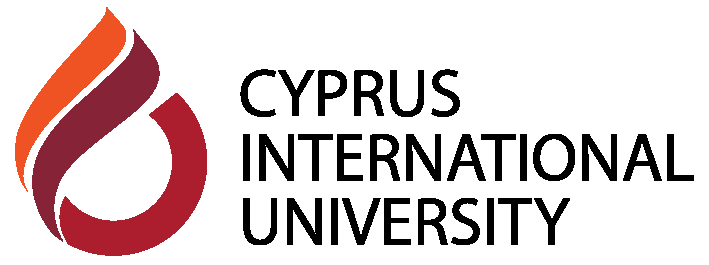
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**Spring2024-2025**

**CMPE124/ISYE223**

**Algorithms and Programming**

**Labwork 3A**

**Question 1: Sum of Elements in a 2D Array**

Write a C++ program that accepts a **3x3 matrix** from the user and passes it to a function to calculate and return the sum of all its elements. Display the result in main().

**Question 2: Transpose of a Matrix**

Write a function void transpose(int matrix[3][3], int transposed[3][3]) that takes a **3x3 matrix** as input and stores its transpose in another matrix. Display both the original and transposed matrices in main().

**Question 3: Row-wise Sum of a 2D Array**

Write a function void rowSum(int arr[4][4]) that takes a **4x4 matrix** as an argument and prints the sum of each row separately. Call this function from main().

**Question 4: Column-wise Maximum in a Matrix**

Write a function void columnMax(int arr[3][4]) that takes a **3x4 matrix** as a parameter and prints the maximum element of each column.

**Question 5: Search an Element in a 2D Array**

Write a function bool searchElement(int arr[4][5], int key) that takes a **4x5 matrix** and a key to search for. The function should return true if the key is found, otherwise false.

**Question 6: Multiplication of Two Matrices**

Write a function void multiplyMatrices(int A[2][3], int B[3][2], int C[2][2]) that takes two matrices as input and stores their product in a third matrix. Print the resulting matrix in main().

**Question 7: Upper Triangle Matrix**

Write a function void printUpperTriangle(int arr[4][4]) that takes a **4x4 square matrix** as input and prints only the upper triangular part of the matrix (elements above and including the diagonal).

**Question 8: Check for Symmetric Matrix**

Write a function bool isSymmetric(int arr[3][3]) that checks whether a **3x3 matrix** is symmetric (i.e., it is equal to its transpose).