Lab 8: Programming Fundamentals
Multidimensional Arrays

Instructions

- Make your own files like Q1.cpp, Q2.cpp, zip the files with your roll number and upload on the slate. Someone failed to upload the task, will be awarded with zero marks.
- *Apply proper checks and necessary conditions while taking input and calculating a value*
- *Use proper Indentation in your code. Marks will be deducted if proper indentation is missing.*
- When you are asked to write any function, you must write main function to check the correct working of that particular function(s).
- Please read the questions carefully, read them twice even thrice to understand them completely.
- In case of any query, please raise your hands and we will be there to solve your query.
- Identify the appropriate data types of variables that you want to use in the program.
- Always print the appropriate messages for the inputs and outputs of program in proper formatted style.
- *You are required to complete all the tasks in lab time. Evaluation will be started 30 minutes before end time.*
- You are advised to delete your code while you are leaving lab, in case of plagiarism you can be awarded with F grade in lab.
- Please concentrate, understand and code. Good Luck :)

Q 1. Write a C++ program in which declare two 2D integer arrays of size 3x3, take values as inputs and find the element-wise product of both arrays. Store result in third array of same size and type.

Q 2. Write a C++ program in which declare three 2D floating point arrays of size 2x2, take inputs from user, perform matrix multiplication of two arrays and store result in third matrix of appropriate size and type.

Q 3. Write a C++ program in which declare two 2D integer arrays of size 100x100, take inputs for the sizes of both matrices to use and take values for that size. Then perform matrix multiplication of both arrays and store result in a separate matrix by using its appropriate size.

Q 4. Write a C++ program in which declare 2D integer array of size 100x100, take inputs for the size of matrix to use and take values for that size. Then check whether the given matrix is scalar matrix or not?

Q 5. Write a C++ program in which declare 2D integer array of size 100x100, take inputs for the size of matrix to use and take values for that size. Then check whether the given matrix is upper triangular matrix or not?

Q 6. Write a C++ program in which declare 2D integer array of size 20x20, take inputs for the size of matrix to use and take values for that size. Store the prime numbers of matrix in 1D array and display.

Q 7. Write a C++ program in which declare 2D integer array of size 20x20, take inputs for the size of matrix to use and take values for that size. Store transpose of the matrix. Finally display the stored matrix.

Q 8. Write a C++ program in which declare 2D integer array of size 20x20, take inputs for the size of matrix to use and take values for that size. Rotate and store the matrix at angle of 270 degree. Finally display the rotated matrix.

Q 9. Write a C++ program in which declare 5D integer array of size 20x20x20x20x20, first take input for the maximum dimension(max 5) to use and then size of each dimension to use. Then take values for that size and after storing the values in array, find the mean value of that array.

Q 10. Write a function named as *check_composite* to check whether a number(passed as an argument) is composite or not? Display the result/message in main function.

Q 11. Write a function named as *combination* to find the combination of a number(n and r passed as an argument) ${}^{n}C_{r}$. Display the result/message in main function.