**Roll No: Name:**

**Assignment I: Programming Assignment Questions on Arrays and Matrices in C**

1. Reverse Array: Write a program to reverse an array of integers. The user should not input the number of elements and the elements themselves, and your program should output the reversed array.

2. Matrix Transposition: Create a program that transposes a matrix. The program should generate the random matrix as the input and output the transposed matrix.

3. Check Symmetric Matrix: Write a program that checks if a square matrix is symmetric. A matrix is symmetric if it is equal to its transpose.

4. Sparse Matrix Representation: Implement a program that converts a matrix into its sparse matrix representation and displays the result. The sparse representation should list out only the non-zero elements along with their row and column indices.

5. Diagonal Sum: Develop a program that calculates the sum of the main diagonal elements of a square matrix. Generate the random matrix of different data type to be given as input.

6. Row and Column Sum: Write a program that calculates the sum of each row and each column of a matrix. The program should display the sums separately for rows and columns.

7. Rotate Matrix by 90 Degrees: Create a program that rotates a square matrix by 90 degrees clockwise. The user should input the matrix, and the output should be the rotated matrix.

8. Multiplication of Two Matrices: Implement a program that multiplies two matrices. The user inputs the dimensions and elements of both matrices. Your program should output the resulting matrix.

9. Dynamic Array Operations: Write a program that performs operations like insert, delete, and search on an array. The size of the array should dynamically increase or decrease as elements are added or removed.

10. Pascal’s Triangle Using Arrays: Develop a program that generates Pascal's triangle up to a given number of rows. The number of rows should be input by the user, and the output should display the triangle.

**----------------------------------- Good luck ----------------------------------**