Tutorial 8

Sparse Matrix And Appplications of Linked List

Question 1: Check if a given matrix is sparse or not.

Question 2: Write a program to Convert a Matrix to Sparse Matrix

Given a matrix with most of its elements as 0, convert this matrix to sparse matrix in C

Examples:

| **Input:** Matrix:	**Output:** Sparse Matrix:
0 1 0 0	0 1 1
0 0 2 0	1 2 2
0 3 0 0	2 1 3
0 0 5 0	3 2 5
0 0 0 4	4 3 4

Hence the row **0 1 1** means that the value of the matrix at row 0 and column 1 is 1

Question 3: Write a C program to implement Bubble Sort on singly linked list.

Question 4: Implement a stack using singly linked list.

Question 5: Implement a queue using singly linked list.

Question 6: Write a Function to check if a singly linked list is palindrome. Given a singly linked list of characters, write a function that returns true if the given list is a palindrome, else false.
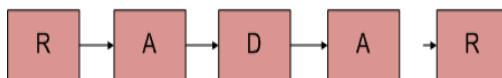
Question 7: Given two polynomials in the form of linked list. The task is to find the multiplication of both polynomials using linked lists. **Examples:**

Input: Poly1: 3x^3 + 6x^1 + 9, Poly2: 9x^3 + 8x^2 + 7x^1 + 2
Output: 27x^6 + 24x^5 + 75x^4 + 135x^3 + 114x^2 + 75x^1 + 18