Data Structure and Algorithm Lab
Lab Sheet-5

Lab schedule: September 23, 2021
Submission deadline: September 29, 2021, 11.59 PM

Q1. Write a program to convert a sparse matrix from a 2D array into

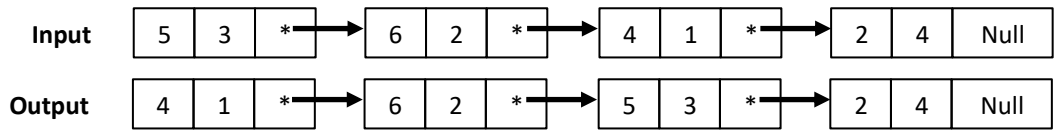
A. An array representation of *n*x3 size, where *n* is the number of non-zero elements in the sparse matrix and each element is represented by row, column, and data.
B. A chain list (Linked list representation of the sparse matrix where each non-zero element is represented by a node containing the data, row, column, and a pointer)

Q2. Write a program to transpose a sparse matrix represented as an array of *n*x3 size, as mentioned in problem 1.A. The time complexity of the algorithm should be order of *n* and the space complexity should be order of 1.

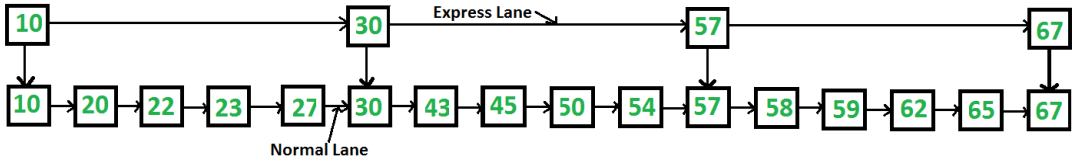
Q3. Due to a rush at the end of the exam, Professor could not arrange the answer sheets in the sequence as desired. However, he mentioned the correct location of each answer sheet with it. Now, Professor wants all the answer sheets in the desired sequence.

Hint:

Item	Location	Link



Q4. Write a program to implement a searching algorithm on a skip list having two layers as shown in below figure:



Assume that the linked list is already sorted. Write your observations on the time complexity of the algorithm.
(You may go through the link: https://www.geeksforgeeks.org/skip-list/)