Data Structures and Algorithms Lab

B.Sc.(Engg.) Part-II, Even Semester, Exam 2022

Shift-II

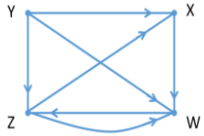
Solve any two of the following three problems

1. You are given two sorted array. Merge them in sorted order with a time complexity of O(n).

2. Create a singly linked list with some given elements.
   i. Print all the elements of the list.
   ii. Delete a given element from the list. If the element is deleted Show: "**Found! The element is deleted…!!**" and "**Not found! Deletation Unseccessful**" otherwise.
   iii. Again Print all the elements of the list after operation ii.

3. Suppose you are given graph G in the form of adjacency matrix. Write a program to determine the path matrix using Warshall's Algorithm. And print all the possible paths between two given nodes.

Graph:



Adjacency Matrix:

$$A = \begin{array}{c} \\ X \\ Y \\ Z \\ W \end{array} \begin{array}{c} \begin{array}{cccc} X & Y & Z & W \end{array} \\ \begin{pmatrix} 0 & 0 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{pmatrix} \end{array}$$

Path Matrix:

$$P = \begin{array}{c} \\ X \\ Y \\ Z \\ W \end{array} \begin{array}{c} \begin{array}{cccc} X & Y & Z & W \end{array} \\ \begin{pmatrix} 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 0 & 1 & 1 \end{pmatrix} \end{array}$$

Input: Y X

Output:

Y -> X

Y -> Z -> X

Y -> W -> Z -> X

N.B.: Since the question was retracted, this is not the original question but one created later after the exam.