(Autonomous Institution Affiliated to Anna University, Chennai)

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U21CSG03-Data Structures

1. Given a linked list, the task is to reverse the linked list by changing the links between nodes. **(8) CO1**

Examples:
Input: *Linked List = 1 -> 2 -> 3 -> 4 -> NULL*
Output: *Reversed Linked List = 4 -> 3 -> 2 -> 1 -> NULL*

Input: *Linked List = 1 -> 2 -> 3 -> 4 -> 5 -> NULL*
Output: *Reversed Linked List = 5 -> 4 -> 3 -> 2 -> 1 -> NULL*

Input: *Linked List = NULL*
Output: *Reversed Linked List = NULL*

Input: *Linked List = 1->NULL*
Output: *Reversed Linked List = 1->NULL*

2. Consider the operator precedence and associativity rules for the integer arithmetic operators given in the table below. . **(4) CO2**

Operator	Precedence	Associativity
+	Highest	Left
−	High	Right
*	Medium	Right
/	Low	Right

The value of the expression **3+1+5*2/7+2−4−7−6/2** as per the above rules is _____

3.The result evaluating the postfix expression **10 5+60 6/*8−** is ---------- **(4) CO2**

4. A hash table contains 10 buckets and uses linear probing to resolve collisions. The key values are integers and the hash function used is key % 10. If the values 43, 165, 62, 123, 142 are inserted in the table, in what location would the key value 142 be inserted? **(4) CO3**

5. Given an Integer **n** and a list **arr**. Sort the array using bubble sort algorithm.

(4) CO3

Examples :
Input: n = 5, arr[] = {4, 1, 3, 9, 7}
Output: 1 3 4 7 9
Input: n = 10, arr[] = {10, 9, 8, 7, 6, 5, 4, 3, 2, 1}
Output: 1 2 3 4 5 6 7 8 9 10

Your Task :

You don't have to read input or print anything. Your task is to complete the function **bubblesort()** which takes the array and it's size as input and sorts the array using bubble sort algorithm.

6. A priority queue is implemented as a Max-Heap. Initially, it has 5 elements. The level-order traversal of the heap is: 10, 8, 5, 3, 2. Two new elements 1 and 7 are inserted into the heap in that order. Find the level-order traversal of the heap after the insertion of the elements. **(4) CO4**

7. The preorder traversal of a binary search tree is 15, 10, 12, 11, 20, 18, 16, 19. Which one of the following is the post order traversal of the tree? **(4) CO4**

8. Construct the minimum spanning tree (MST) for the given graph using Prim's Algorithm-

(8) CO5